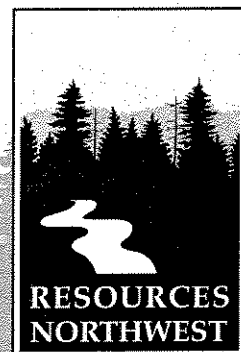

Blanchard Mountain Assessment

Washington Department of Natural Resources

September 30, 1999

Submitted to:
Washington Department of Natural Resources

Prepared by:
Resources Northwest Consultants



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Submitted to:

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Forest Resources
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PREFACE

This report was developed for the Washington Department of Natural Resources (DNR) for their use in assessing DNR land in the Chuckanut Mountain Range, near Blanchard, Washington. The information in this report should not be construed as an official DNR position unless so designated by other authorized documents.

A majority of the information in this assessment was obtained from existing sources, such as agency species lists and data, literature, and unpublished reports and data. Site reviews and surveys also were conducted by members of the assessment team during the summer of 1999.

Numerous individuals contributed to this assessment, and the primary contributors are listed here. Other contributors are referenced within the document.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this assessment is to describe natural resources and land uses in and around Department of Natural Resources (DNR) lands on Blanchard Mountain, Washington (Figure 1). The DNR has requested this information to assist them in evaluating these lands for possible designation as a Natural Resources Conservation Area (NRCA).

This assessment is specifically focused on addressing attributes that directly or indirectly pertain to NRCA criteria. These attributes include: land use; geomorphology; surface water; vegetation; wildlife; invertebrates; fish and scenic resources. Cultural resources were not evaluated in detail as part of this project, although historical land uses and cultural resource sites are documented. The following sections describe the key NRCA criteria as defined by Legislative and management guidance.

1.2 NRCA Criteria

1.2.1 Legislative Directive

The Washington State Legislature passed legislation in 1987 that defines the NRCA program and the primary resources that NRCA's are intended to protect (RCW 79.71.010). That legislation contains the following statements; the primary resources of concern have been underlined.

1. *There is an increasing and continuing need by the people of Washington for certain areas of the state to be conserved, in rural as well as urban settings, for the benefit of present and future generations;*
2. *such areas are worthy of conservation for their outstanding scenic and ecological values and provide opportunities for low-impact public use;*
3. *in certain cases acquisition of property or rights in property is necessary to protect these areas for public purposes; and*
4. *there is a need for a state agency to act in an effective and timely manner to acquire interests in such areas and to develop appropriate management strategies for conservation purposes (1991 c 352 Sec 1; 1987 c 472 Sec 1).*

Additionally, lands and waters considered to be worthy of NRCA status are defined in RCW 79.71.020 as:

1. *lands identified as having a high priority for conservation, natural systems, wildlife, and low-impact public use values;*
2. *an area of land or water, or land and water, that has flora, fauna, geological, archaeological, scenic, or similar features of critical importance to the people of Washington and that has retained to some degree or has reestablished its natural character;*
3. *examples of native ecological communities; and*
4. *environmentally significant sites threatened with conversion to incompatible or ecologically irreversible uses (1991 c 352 Sec. 2; 1987 c 472 Sec. 2).*

1.2.2 Statewide Management Plan

The 1992 DNR Statewide Management Plan for NRCA's further defines natural resources and land characteristics worthy of NRCA status (Washington Department of Natural Resources 1992). Key points of those guidelines are provided here with the primary resources of concern underlined:

The NRCA program's primary purpose is to protect outstanding examples of native ecosystems and habitat for endangered, threatened and sensitive plants and animals. Areas with multiple features -- such as geologic and scenic areas, cultural resources and threatened sites -- are given priority.

There will be opportunities for environmental education and low impact public uses where such uses do not adversely affect the resource values the area was intended to protect.

See separate PDF file for

Figure 1. Shaded relief
Blanchard Mountain Assessment Area

2.0 AREA DESCRIPTION

2.1 Location

The Assessment Area is dominated by Blanchard Mountain, which is the southern most peak of the Chuckanut Mountain Range (Figure 1). The western edge of that mountain range extends along the Puget Sound shoreline. The San Juan Islands are directly west of this shoreline.

The Blanchard Mountain Assessment Area encompasses approximately 3,000 acres of Washington State DNR lands on Blanchard Mountain (Figures 2 and 3). A total of approximately 5,000 acres of DNR Forest Board Transfer lands exist on Blanchard Mountain, and the Assessment Area is approximately 60 percent of that total. The DNR lands on Blanchard Mountain were privately owned up through the early to mid 1900's at which time they were transferred to the State. This area is located in northwestern Skagit County (Township 36 N, Range 3 E), immediately south of the Whatcom County line (Figure 2).

The northwest portion of the proposed NRCA connects with the 2,680 acre Larrabee State Park (Figures 1-3). All other land within approximately 1.5 miles of the proposed NRCA is privately owned. This ownership primarily consists of large (greater than 40 acres) commercial forest lands to the north and small forest parcels and residential lots to the east and south.

Blanchard Mountain is within a few miles of major transportation corridors. Interstate-5 (I-5) is only about 1.5 miles from the eastern edge of the Assessment Area and the Chuckanut Drive Scenic Roadway (State Highway 11) extends through the western edge of the Assessment Area (Figure 2).

2.2 Local Population

Bellingham, Washington (approximately 50,000 residents) is the closest city and located approximately five miles north. Sedro-Woolley, Burlington and Mount Vernon, Washington (total population of approximately 40,000 residents) are approximately 10 to 12 miles to the southeast.

There are approximately 10,600 residents and 4,000 residences within the Samish Bay Watershed which includes the Assessment Area and lands within approximately two miles of that area (Skagit County Dept. of Planning 1995). Small communities (less than 1,000 residents) within 2 miles include: Blanchard; Alger; Bow; Edison; and Colony Mountain (Figure 2).

The watershed population is expected to increase by 40 percent during the next 20 years (Skagit County Dept. of Planning 1995). Approximately 20 percent of the current watershed population is within Whatcom County (immediately north of the Assessment Area), and that portion contains the highest residential growth rate in the watershed.

See separate PDF file for

Figure 2. Blanchard Mountain State Lands and Vicinity

See separate PDF file for

**Figure 3. Boundary and Topography
Blanchard Mountain Assessment Area**

2.3 Land Use

2.3.1 Assessment Area

The two predominant land uses in the Assessment Area are timber management and recreation. The following sections describe each.

2.3.1.1 Timber

Since approximately 1980 the DNR has harvested approximately 1,440 acres of forest from Blanchard Mountain DNR lands (including the Assessment Area) using even-aged silviculture (Figure 4). The preliminary Five Year DNR Management Plan for the area calls for an additional approximately 640 acres to be harvested through Year 2003 (Figure 4). The cumulative harvest rate for past and proposed future timber management averages approximately 80 to 120 acres per year.

A general review shows that approximately 85 percent of the Assessment Area is currently available for forest management when considering the provisions of the DNR Habitat Conservation Plan (HCP). The remaining portion of the area consists of stream, lake, wetland and rock outcrop conservation zones. Another 20 percent of the Assessment Area could potentially be unavailable for timber harvest due to unstable slopes and scenic viewsheds along Chuckanut Drive. At this time, however, the exact amount and location of those other sites is not known.

2.3.1.2 Recreation

Close to population centers in both Whatcom and Skagit Counties, the Chuckanut Mountains are well known and appreciated by an increasing number of people in both counties, and by many others from Seattle, Vancouver and beyond who also are discovering for themselves what the Chuckanut Range has to offer as regionally significant, though largely undeveloped, recreation resource (Osprey Environmental Services, 1996). Primary recreational uses of the area include: (1) trail use by hikers, equestrians, and mountain bikers; (3) camping; (4) hang-gliding and para-sailing; (5) rock climbing; and (6) scenic viewing. Scenic viewing is typically incorporated into all other recreational pursuits of the area; however, it is also identified here as an additional recreation activity due to the preponderance of individuals whom visit the area solely to experience the scenic vistas.

Trail Use: Currently, a network of approximately 20 miles of generally high quality trails are located in the Assessment Area, and they receive frequent use by hikers, bikers and equestrians (Figure 5). Volunteer groups have constructed and maintained a majority of those trails, although the DNR maintains about 5 miles of trail to Lilly and Lizard Lakes. The voluntary maintenance of trails on Blanchard Mountain is notable and shows a high public concern and interest in the values of the area. Groups that participate in this maintenance include the Pacific Northwest Trails Association and Backcountry Horsemen.

Four primary trailheads are located in or adjoining the proposed conservation area: Lizard/Lilly Lake Trail, Incline Trail, Chuckanut Drive, and Samish Overlook (Figure 5). Trails within the proposed conservation area also can be accessed from numerous other secondary trailheads located on the B-2000 and B-1000 Roads. These trails and others within the Chuckanut Mountain Range are described in detail within the document entitled: *Chuckanut Mountain Trails Master Plan* (Osprey Environmental Services, 1996).

The Chuckanut Mountain Trails Master Plan is a detailed assessment of the current and proposed future trail network and trail maintenance needs for the Chuckanut Mountain Range. This plan was developed under the guidance of a steering committee comprised of agency representatives and 19 citizens

representing the various user groups, area residents, environmental groups and other interests. The planning efforts also were sponsored by numerous state and county agencies including the: Whatcom County Parks and Recreation; Bellingham Parks and Recreation; Skagit County Parks, Recreation and Fair; Washington State Parks; Washington Department of Natural Resources and Washington Department of Fish and Wildlife, all of whom possess plans and programs of concern for the design, location, use and maintenance of trails in the Chuckanuts.

Approximately 10 miles of additional trails have been proposed for the Blanchard Mountain Assessment Area including a trail system that connects with the Larrabee State Park trails (Osprey Environmental Services 1996). The addition of these trails and a few other loop trails proposed for day hikers would create a trail network of at least 60 miles of trail within the Assessment Area and Larrabee State Park (Figure 5).

The existing trail system on Mt. Blanchard and Larrabee State Park is reportedly one of the best low elevation trail systems available in the Puget Sound Basin. The increasing population growth of the Puget Sound Basin will place continually increasing demands for open space for recreational pursuits in the Blanchard Mountain area. The Chuckanut Mountain Range is within the lowland growth sector of Puget Sound and will undoubtedly become a significant focus for Washington State residents in their future pursuit for high quality trail systems in close proximity.

Camping: The Assessment Area contains two hike-in campgrounds at Lilly and Lizard Lakes which require a minimum two to three mile hike. The campsites are not fully developed, yet they have fire grates, toilets and hitching posts. Other backcountry camping occurs sporadically at other sites in the Assessment Area, including occasional car-camping at the Samish Overlook.

Hang Gliding: The Samish Overlook (Figure 3) is known among hang gliders and para-sailers as one of the premiere locations for getting "sky" in western Washington. Easterly moving winds moving across Samish Bay from the San Juan Islands create exceptional updrafts for this sport. Reportedly some participants are able to maintain 4 to 6 hours of flight time. The precipitous terrain drop below Samish Overlook, scenic vistas of the San Juan islands, and the good quality landing sites on the nearby farmland near Blanchard have made this an increasing popular site for hang gliding. The interest in the Samish Overlook site primarily began as a result of the timber harvest that opened up that site to hang gliders about 10 years ago. The launch areas reportedly receive one to nine participants a day during spring through fall when updrafts are favorable. Winter use occurs less frequently.

Rock Climbing: Rock climbing in the Assessment Area appears to be primarily limited to the cliff face on Oyster Dome. Climbers can conduct multi-pitch climbs of the entire face and shorter routes, which typically occur near the summit. The amount of use is not quantified; however, the site is well known among the local climbing community. This site has similar characteristics to that of Mt. Erie on Whidby Island, but without the direct road access present at Mt. Erie. The Oyster Dome is one of a few low elevation rock climbing sites next to, or close by, Puget Sound that has relatively easy access and spectacular views of the Sound.

Scenic Viewing: As pointed out earlier in this section, scenic viewing is typically incorporated into all other recreational pursuits of the Assessment Area. Yet there are a number of individuals and groups which travel to view points solely in the area to experience the scenic vistas.

The abrupt topographic rise from Puget Sound provides spectacular view-points from the mountain. One example is the Samish Overlook, which is a road-side viewpoint that provides a panorama of Puget Sound, San Juan Islands, Olympic Mountains, Mount Rainier, Cascade Mountains, and Canada. This overlook is

at 1,200 ft elevation, yet only approximately 2,000 horizontal feet from the Puget Sound shoreline (Figure 3; Appendix A Photos 1-4). These and other scenic resources are described further in Section 3.7.2: *Scenic Resources*.

Chuckanut Drive is a frequently traveled scenic roadway which passes through the western edge of the Assessment Area, along the Samish Bay salt water shoreline. This route is known for its varied high quality scenery for weekend trips or for those just passing through the region. The southern portion of this route provides rural views of the farm land in Samish River flood plain, while the northern portions provide scenic travel through mature forests at the point where the Chuckanut Mountain range meets salt water. Periodic view points along the route provide sea-level views of the San Juan Islands.

2.3.2 Surrounding Areas

Currently there are three primary land uses within 1.5 miles of the Assessment Area boundaries: (1) State Park (Larrabee); (2) residential; and (3) timber management.

Larrabee State Park is managed to conserve the natural features, including the extensive mature forest (50-70 years old) in that park. This park contains approximately 20 miles of hiking trails, one major campground, a boat launch, and a roadside scenic overlook at Cyrus Gates Overlook. A majority of the Park's land was logged during the early part of the 20th century when it was privately owned. Today the park primarily is forested with 50 to 70 year old coniferous forest with some small, dispersed stands of old-growth coniferous forest.

Commercial timber management is the primary land use within 1.5 miles to the north and northeast of the Assessment Area. These lands are managed with even-age silviculture rotations approximately every 40-60 years.

Land within 1.5 miles east, south, and northwest of the Assessment Area is privately owned and most of it has been subdivided into small (1-20 acre) parcels. Future subdividing of many these parcels will be limited by the Skagit County rural zoning, however, most parcels already are less than 20 acres in size. A majority of those private lands retain continuous forest cover; however, that forest cover may diminish through the coming decades as residential development increases in the area. The smallest scale subdividing appears to have occurred along the Interstate-5 corridor, along Samish Lake shoreline, and on the eastern, southern and western portions of Colony Mountain.

See separate PDF file for

Figure 4. Preliminary Timber Harvest Units—Five year period

See separate PDF file for

Figure 5. Chuckanut Mountain Trail System

3.0 ENVIRONMENTAL CHARACTERISTICS

3.1 Geomorphology

3.1.1 Geology

Blanchard Mountain consists of metamorphic bedrock composed of phyllite, greenschist, and meta-igneous rock (Misch 1966; Mustoe 1999). This bedrock represents a westward extension of the Shuksan Metamorphic Suite, a rock unit that is best known for its occurrence in the Mount Shuksan massif 40 miles to the east in the Cascade Mountain Range (Mustoe 1998). The general geology of Blanchard Mountain is shown in Figure 6.

A deposit of stilpnomelane (stilp-NOM-e-lane) has been found in a road-cut created on Blanchard Mountain in 1988 (Mustoe 1998). This mineral also is found in other areas of the North Cascade Mountains such as Mount Shuksan; however, the stilpnomelane formations on Blanchard Mountain are sought out by mineralogists and local science classes due to the large size of that formation (Mustoe 1999).

The bedrock of the Chuckanut Mountain Range north of Blanchard Mountain (north of Oyster Creek) is significantly different than that of Blanchard Mountain. This bedrock consists of folded and steeply inclined sedimentary rock which has created a series of parallel ridges, separated by narrow valleys (Figures 1 and 3). Shallow lakes have developed within these valleys on beds of soft shale (Mustoe 1999).

The Assessment Area has been covered by at least six episodes of continental glaciation during the last two million years, and ice sheets may have been as much as one mile deep (Mustoe 1999). The current rounded summit of Blanchard Mountain shows the resilience of that particular metamorphic rock to those continental ice sheets.

Blanchard Mountain is one of a few places in the region where ancient marine rocks have been preserved as coastal mountains (Mustoe 1999). As shown in Figure 7, all other areas along the eastern shoreline of Puget Sound (except for the Deception Pass/Mount Erie area) consist of coastal plains made up of fluvial and glacial deposits.

3.1.2 Topography

Blanchard Mountain prominently stands out from all viewing directions (Figures 1 and 3). The highest point of the mountain is 2,300 feet elevation, with a majority of the surrounding terrain not more than 500 feet in elevation (Appendix A Photo 12).

The steepest slopes in the Assessment Area are on the westerly facing side of Blanchard Mountain. These hillsides generally have 30 to 90 percent slopes, with some rock cliffs near Oyster Creek and near the mountain summit (Figures 1 and 3). The Oyster Dome is a prominent 250 foot cliff near the mountain summit with a gentle eastern slope and half-dome shape crest. The cliff is made up of meta-igneous rock which is more resistant to glacial abrasion than the surrounding schist and phyllite. Large boulders at the base of these cliffs indicate these cliffs were created as a result of catastrophic events, such as an earthquake, possibly 100 to 200 years ago (Mustoe 1999).

Caves are common within the boulder fields at the base of Oyster Dome, and possibly exist in some of the smaller boulder aggregations in forested areas west of the Oyster Dome. The caves at Oyster Dome have an intricate network of passages consisting of a series of small chambers linked by crawl-ways. The longest passages can be as much as several hundred feet long with rooms at several levels. Some of the chambers contain small streams or ponds (Mustoe 1999).

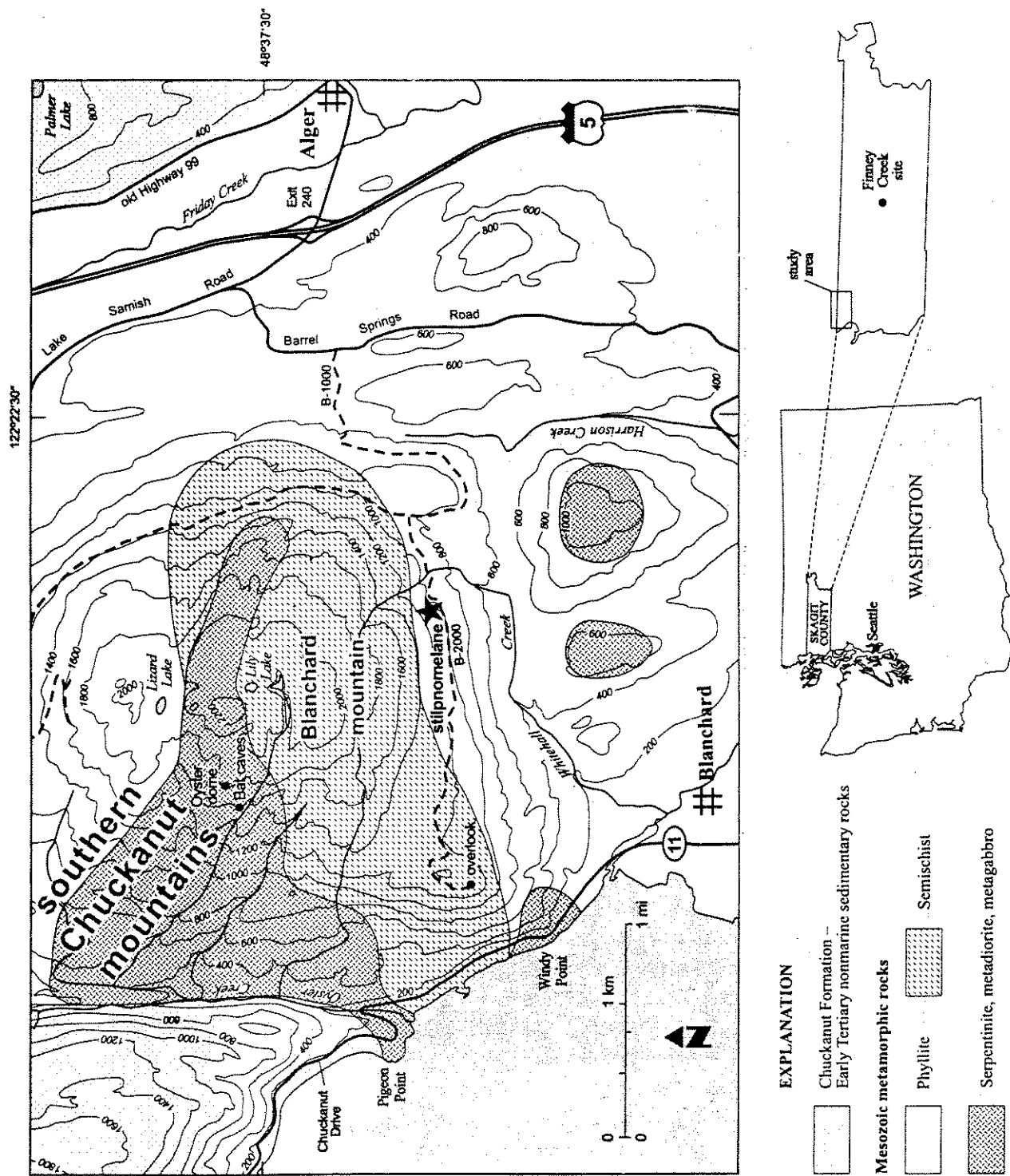
The eastern and northeastern sides of Blanchard Mountain have slopes of 20 to 40 percent that extend down to Lake Samish and Friday Creek at approximately 500 feet elevation (Appendix A Photo 9). To the northwest, the Blanchard Mountain terrain blends into the northern portions of the Chuckanut Mountain Range at approximately 800 to 1,800 ft elevation (Figures 1-3; Appendix A Photos 5 and 6). Topography on the southern side of Blanchard Mountain drops to the much smaller Colony Mountain (1,000 ft elevation) (Figures 1-3). The terrain south of Colony Mountain grades into the Samish River and Skagit River flood plain (Appendix A Photo 1).

3.1.3 Soils

Soils in the Assessment Area generally are shallow, typically ranging from 1 to 3 feet deep. Areas with 30 to 65 percent slopes typically consist of the Chuckanut gravelly loam soils which primarily were formed from volcanic ash and colluvium derived from sandstone and glacial till (USDA 1989). The inherent instability of these slopes could limit the use of wheeled and tracked forest harvesting equipment in the steepest areas of these soils (USDA 1989).

Areas with 65 to 90 percent slopes typically are composed of the Dystric Xerochrepts soils with interspersed rock outcrops (USDA 1989). The Dystric Xerochrepts soils were formed from colluvium primarily derived from glacial till and sandstone. The rock outcrops in these areas limit the area available for forest harvesting. Steep yarding paths, skid trails, and firebreaks are subject to rilling and gullyng unless they are protected by plant cover or water bars (USDA 1989).

Road failures and landslides are likely to occur in the Dystric Xerochrepts soils following road construction and clearcutting (USDA 1989; Thorsen 1989). These soils also are susceptible to catastrophic debris torrents generated during episodes of heavy rainfall (McCormack 1995). An example of such slope instability occurred on November 11, 1989, when a debris torrent descended the western side of Blanchard Mountain, originating from near a recently clearcut area (McCormack 1995; Mustoe 1999). That debris torrent damaged a residence and also temporarily blocked that Chuckanut Scenic Drive (State Highway 11).



See separate PDF file for

Figure 6. Geologic Map of Washington

3.2 Surface Water

3.2.1 Precipitation

Blanchard Mountain has diverse precipitation conditions as a result of its location adjacent to Puget Sound and at the base of Cascade Mountain Range. Average annual precipitation at the western base of Blanchard Mountain is approximately 30 inches, whereas the upper portions of the mountain and eastern slopes receive approximately twice that amount. The conditions on the lower elevation western slopes is comparable to that of the relatively dry conditions found on the San Juan Islands. In contrast, the higher amounts of precipitation at the summit and on the eastern slopes of the mountain are similar to those of the Cascade Mountain Range. This wide precipitation variability, combined with the moist air flow off Samish Bay, has created unique micro-climates which also has led to a diversity of plant and animal life on the mountain.

3.2.2 Watersheds and Streams

The Assessment Area lies within the Samish Bay watershed that includes two smaller Watershed Administrative Units (WAU): Samish Bay and Friday Creek (Figure 8). The 12 miles of streams in the Assessment Area either flow directly into Samish Bay or reach the Bay via other downstream systems.

The Samish Bay WAU encompasses a majority (approximately 75 percent) of the Assessment Area, and it has seven Type 3 and 4 streams that flow approximately 0.5 to 2.5 miles into Samish Bay. Oyster Creek is the largest of these streams, and the others either flow directly into Samish Bay or into Oyster Creek or into Whitehall Creek (Figure 8).

The other 25 percent of the Assessment Area is within the Friday Creek WAU, which has two Type 3 and 4 streams. The largest of these streams extends easterly into Bear Creek, which then flows into Friday Creek which extends to the Samish River (Figure 8).

Samish Bay contains approximately 1,100 acres of salt water mudflats farmed for commercial shellfish production, primarily Pacific oysters and Manila clams (Skagit County Dept. of Planning 1995). Recreational shell fish harvest also occurs in portions of the Bay.

3.2.3 Wetlands

The largest wetlands in the Assessment Area are Lilly and Lizard Lakes which are about 10 acres each and located near the top of Blanchard Mountain (Figure 8). Approximately 22 acres of herbaceous wetlands exist on the fringes of the two lakes and at a pond along Oyster Creek. A small amount (estimated to be less than 30 acres) of forested wetlands also are present along the fringes of Lilly and Lizard Lakes, the edges of Oyster Creek, and at some small sites adjoining other streams in the area. These forested wetlands are not identified in Figure 8.

See separate PDF file for

Figure 8. Vegetation and Surface Water

3.2.4 Rain-on-Snow Zones

Approximately 70 percent of the Assessment Area is within the rain-on-snow (ROS) zone which extends from approximately 1,200 to 4,000 feet elevation. Rain-on-snow events result from large amounts of precipitation falling on a snow-pack, creating exceptionally high quantities of surface run-off and stream flows. These flows can potentially cause severe surface erosion, slope failures, debris torrents, and stream scouring. These ROS events typically occur in areas with low amounts of forest cover or immature forest, due to the tendency of those areas to accumulate deep snow-pack.

Areas within ROS zones with hydrologically mature forests have the lowest risk of ROS events. Hydrologically mature stands are those with at least 75 percent coniferous forest and a canopy closure greater than 70 percent. An estimated 85 percent of the ROS zone in the Assessment Area is currently considered as hydrologically mature.

3.3 Vegetation

3.3.1 Uplands

Approximately 81 percent of the Assessment Area consists of coniferous forest between 31 and 70 years old (Figure 8; Table 1). Predominant coniferous trees are western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*), and western redcedar (*Thuja plicata*). Four percent of the area has coniferous forest 71 to 100 yrs-old, and three percent of the area has old-growth forest greater than 300 years old (Table 1). Some mixed deciduous and coniferous forest stands exist, particularly within the riparian zones, and those stands were mapped as coniferous when the sites were dominated by coniferous trees.

Deciduous forests cover approximately four percent of the Assessment Area, and those forests primarily are limited to early successional stages in clear-cuts, riparian areas, and other sites with a high degree of soil moisture. Red alder (*Alnus rubra*) is the primary deciduous tree species, with fewer big-leaf maple (*Acer macrophyllum*), cherry (*Prunus emarginata*) and other species. Aspen (*Populus tremuloides*) stands (0.25 to 1 acre in size) also have been found in the Assessment Area on the south and north sides of Blanchard Mountain. Appendix B lists plants found within the Assessment Area and vicinity through a variety of surveys and sources.

Table 1. Acreage of cover types currently present in the Blanchard Mountain Assessment Area.

Forest Age Class	Area (acres)	Percent
Coniferous Forest		
1-30 years old	197.90	7
31-70 years old	2,446.93	81
71-100 years old	124.46	4
100+ years old	75.85	3
Subtotal	2,845.14	95
Other		
Deciduous Forest 30-17 years old	149.50	4
Wetlands	22.35	< 1
Rock	10.22	< 1
Total	3,027.21	100

Forests within the Assessment Area contain a unique variety of coniferous and deciduous tree species that are representative of conditions ranging from wet coastal sites (e.g. Sitka spruce, grand fir, Pacific yew) to drier inland sites (e.g. quaking aspen and paper birch). Table 2 lists trees in the Assessment Area, and Appendix B identifies the sources of information for each.

Table 2. Tree species found within the Blanchard Mountain Assessment Area.

Common Name	Scientific Name
Coniferous Species	
Douglas Fir	<i>Pseudotsuga menziesii</i>
Grand Fir	<i>Abies grandis</i>
Lodgepole Pine	<i>Pinus contorta</i>
Pacific Madrone	<i>Arbutus menziesii</i>
Pacific Yew	<i>Taxus brevifolia</i>
Sitka Spruce	<i>Picea sitchensis</i>
Western Hemlock	<i>Tsuga heterophylla</i>
Western Redcedar	<i>Thuja plicata</i>
Western Yew	<i>Taxus brevifolia</i>
Deciduous Species	
Aspen	<i>Populus tremuloides</i>
Bittercherry	<i>Prunus emarginata</i> var. <i>mollis</i>
Western Paper Birch	<i>Betula papyrifera</i> :var. <i>commutata</i>
Red Alder	<i>Alnus rubra</i>
Bigleaf Maple	<i>Acer macrophyllum</i>
Black Cottonwood	<i>Populus trichocarpa</i>
Cascara	<i>Rhamnus purshiana</i>
Scouler's Willow	<i>Salix scouleriana</i>

3.3.2 Riparian

There are approximately 291 acres of riparian conservation zones (average of 100 ft buffer widths) along the 12 miles of streams in the Assessment Area. Riparian areas adjoining non-riverine wetlands cover an additional approximately 40 acres, which makes a total of approximately 331 acres of riparian conservation zones in the Assessment Area.

3.3.3 Rare Plant Communities

Natural Heritage Program Data: No rare or significant plant communities have been identified within the Assessment Area at this time, although the Washington Natural Heritage Program (WNHP) has identified some significant plant ecosystems approximately two to five miles north and northwest of the Assessment Area. Table 3 lists those communities. This is not a complete inventory of rare plant communities but it does reflect what has been found thus far in and near the Assessment Area.

Rare plant communities found outside the Assessment Area consist of old-growth coniferous forests in Larrabee State Park and near Cedar Lake (Figure 2). A wetland also is located approximately seven miles northeast of the Assessment Area in the Lake Louise Natural Resources Conservation Area (Figure 2).

Table 3. Significant plant communities in the Blanchard Mountain Assessment Area or within 10 miles of that area, as of June 10, 1999 (Washington Natural Heritage Program (WNHP) data base).

Plant Community	Within Action Area	Within Ten Miles of Action Area	Federal Status ^a	State Status ^a
<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Polystichum munitum</i> forest		✓		
<i>Pseudotsuga menziesii</i> - <i>Tsuga heterophylla</i> / <i>Gaultheria shallon</i> forest		✓		
<i>Thuja plicata</i> - <i>Tsuga heterophylla</i> cover type		✓		S
Low elevation fresh water wetland		✓		

^a Status: S = Sensitive, T = Threatened

3.3.4 Rare Plant Species

Natural Heritage Program Data: As of June 10, 1999, the WNHP data base identified eight significant plant species which may occur within the Assessment Area or within 10 miles of that area (Table 4). This is not a complete inventory, but it reflects the current status of the WNHP data base.

Table 4. Rare plant species within the Blanchard Mountain Assessment Area or within 10 miles of that area, as of June 10, 1999 (Washington Natural Heritage Program (WNHP) data base).

Species	Within Action Area	Within Ten Miles of Action Area	Federal Status *	State Status *
Western floater, <i>Anodonta kennerlyi</i>		✓		
Oregon floater, <i>Anodonta oregonensis</i>		✓		
Poor sedge, <i>Carex magellanica</i> ssp. <i>irrigua</i>		✓		S
Small duckweed, <i>Lemna minor</i>		✓		
Water lobelia, <i>Lobelia dortmanna</i>	✓	✓		T
Branching montia, <i>Montia diffusa</i>		✓		S
Rosy owl-clover, <i>Orthocarpus bracteosus</i>		✓		T
Douglas' spirea, <i>Spirea Douglasii</i>		✓		

* Status: S = Sensitive, T = Threatened, SC = Species of Concern

Other Survey Data: Rare plant surveys were conducted by the WNHP in the Assessment Area during late May and early June 1999. Results of those surveys are described here, and a list of plant species found during those surveys, and other previous surveys, are listed in Appendix B.

Between 26 May and 8 June, 1999 a survey was conducted for rare plant species by a WNHP contract botanist (Zika 1999). This survey occurred within representative samples of habitats known to potentially include the following plants:

<i>Aster borealis</i>	<i>Isoetes nuttallii</i>	<i>Orthocarpus bracteosus</i>
<i>Carex buxbaumii</i>	<i>Lepidium oxycarpum</i>	<i>Potamogeton obtusifolius</i>
<i>Carex comosa</i>	<i>Liparis loeselli</i>	<i>Ranunculus californicus</i>
<i>Carex pauciflora</i>	<i>Lobelia dortmanna</i>	<i>Salix sessilifolia</i>
<i>Carex magellanica</i> spp. <i>irrigua</i>	<i>Montia diffusa</i>	<i>Utricularia intermedia</i>
<i>Cimicifuga elata</i>	<i>Ophioglossum pusillum</i>	<i>Utricularia minor</i>
<i>Crassula connata</i>		

Only the *Montia diffusa* and *Cimicifuga elata* were expected to be found in the second growth forest which covered a majority of the survey area (Zika 1999). The other species in the above list are not tolerant of the shade, therefore surveys for those species occurred in areas with greater degrees of direct sunlight, such as forest edges, wetlands, streambanks, wet ledges, seeps, talus, and rock outcrop balds.

Montia diffusa is the only WNHP rare plant previously identified in the Assessment Area (in 1989), and that species was not found during the surveys conducted during May and June of 1999. Another rare species (*Carex magellanica* ssp. *irrigua*) may have been sighted during Zika's 1999 survey on an island in Lilly Lake, however, that observation was made from a distance due to high water levels, and the plant did not appear to be flowering at the time. A follow-up visit during a flowering period was recommended by Zika (1999). Such a follow-up survey should also include further searches for other plants along the fringes of Lilly Lake, such as *Aster borealis*, *Carex pauciflora*, *Liparis loeselli*, *Lobelia dortmanna*, *Ophioglossum pusillum*, and *Potamogeton obtusifolius* (Zika 1999).

The only other systematic botanical survey known to have occurred within the Assessment Area was one conducted between 11 June and 10 October, 1998 along the Lilly Lake trail (Duemmel 1998, unpub. data). The results of that survey and others conducted in Larrabee State Park and other portions of the Chuckanut Mountain Range are included in Appendix B.

3.4 Wildlife

3.4.1 Introduction

The wildlife of Blanchard Mountain is diverse for northwest Washington and they include unique concentrations of certain vertebrate and invertebrate groups. Species occurrence on Blanchard Mountain was determined from existing information, and it represents 227 vertebrate species including: 16 fish; 10 amphibians; 6 reptiles; 150 birds; 45 mammals; and 198 moth and butterfly species. Appendix C lists wildlife, fish and invertebrate species known to use Blanchard Mountain or other areas of the Chuckanut Mountain range.

Due to the coastal aspect of the mountain, 22 vertebrate species are primarily marine associated, while the remaining non-fish species are terrestrial or freshwater associated. At the time of this assessment, approximately eight percent (18 species) of the non-fish vertebrates are listed as threatened or endangered species, or as species of concern at the federal or state level. Although this information suggests a high degree of species diversity and regional species richness, it does not represent all of the wildlife species associated with Blanchard Mountain.

Although Blanchard Mountain is the focus of this biological review, it is important to consider Blanchard as one component of a larger diverse landscape. Rising abruptly from the eastern shore of Samish Bay is the expansive forested slopes of an area collectively known as the Chuckanut Range, of which Blanchard Mountain is the highest summit (Figure 9). Blanchard is connected to the forests of Chuckanut Mountain to the north, which in-turn are connected with forests of the North Cascade Mountain Range (Figure 9).

The Chuckanut Mountain Range is a unique coastal range extending over eight miles, and as a whole spanning over 25 square miles between the marine shoreline to the west and Lake Samish and Interstate-5 to the east (Figure 2). The rich habitat conditions of this range are the result of a combination of factors including: marine influence, dynamic topography, varied annual rainfall, geology and exposed rock formations, talus caves, a variety of soil conditions, stream courses, wetlands and fire.

The wildlife and invertebrate species in this report were determined by searching several local sources and accumulating field notes from biologists, students and naturalists who have spent time on Blanchard, Colony and Chuckanut Mountains. Although the area has not been subject to a systematic field inventory, the accumulated data is enough to reflect the rich diversity and living dynamic of the mountain's wildlife and supporting habitats. However, the lack of site specific occurrences, abundance and seasonal use patterns for many species, poses challenges in planning and management of the area's diversity, and in protecting ecological sensitive sites that may be present, but not yet identified.

See separate PDF file for

Figure 9. Landsat TM 1995

Image of Blanchard Mountain and Vicinity

The information used for this wildlife resources section is based on technical and non-technical reports from the following sources: the Whatcom County Land Trust, Herbert A. Brown, Ph.D. (Western Washington University); Clyde Senger, Ph.D. (Western Washington University); Kara Randall (WWU); David Drummond (Consulting Wildlife Biologist); Jan Gordon (Habitat Watch); Lars Crabo, M.D.; Tim Wahl (Bellingham Greenways Director); Lois and George Garlick (Nature Conservancy Stewards); Al Hanners (Geologist/Naturalist); Carl Bachelor (Planning Consultant); Whatcom County Planning Department- *Significant Wildlife Areas of Whatcom County* (A. M. Eissinger 1994); Fish and Wildlife Habitats Map Folio (1994); *A Guide to Bird Finding in Washington* (T. Wahl & D. Paulson 1991); Priority Habitats and Species mapped and tabular data (WDFW 1992,93,94); *Bats of British Columbia* (D. Nagorsen and R. M. Bringham 1993); *Watching Washington Butterflies* (R. M. Pyle 1974) and Vikki Jackson (Consulting Biologist).

3.4.2 Macro-Habitats and Associated Wildlife

Forests: The forests of Blanchard Mountain are the single most important habitat feature. This relatively large block of contiguous forest provides cover, temperature moderation, vertical and horizontal structure, down woody material, nutrient cycling, water cycling and storage and many other wildlife values. These older second growth forests (i.e. 50-70 years old) offer a habitat type that is not common on nearby landscapes, with Alger, western Anderson Mountains, and Lookout Mountain under-going intensive timber harvest cycles resulting in a high degree of fragmented forest. The habitat features of large tracts of mature conifer forests are important for supporting species dependent on forest interior habitat and late successional conditions.

An important habitat feature of the Blanchard forests are the large stumps and downed logs remaining from the first harvest. These features provide habitats for pileated woodpeckers, amphibians, small mammals, and they also serve as nutrient reserves for decades. The mid-successional forests of Blanchard and Chuckanut Mountains also provide future sources of potential old growth forest habitats, which are rare within the low elevations of Puget Sound and within the Chuckanut Coastal Mountain Range.

Coastline: The Chuckanut coastal mountain range has conditions and features needed by migratory birds which follow the forested ridgelines in spring and fall. Migratory birds are a common sight over Blanchard with kettles of turkey vultures and nearly every other species of northwest raptor utilizing the drafts from the Samish lowlands to lift and send them up or down the coast. Other birds also common to this ingrained route include trumpeter and tundra swans, snow geese, dabbling ducks and shorebirds. While raptors and waterbirds are following an aerial path, other species follow a foraging route that requires specific habitat and food to support their successful passage; these birds include: flocks of red crossbills, grosbeaks, siskins and neotropical migrants such as humming birds, swallows, warblers, flycatchers, vireos, nighthawks and swifts which are all known to utilize this flyway and associated habitat. One record of a hoary bat, recovered from high on Chuckanut Mountain, is likely a migratory individual. Even monarch butterflies, and their mimic the viceroy, are known to move through this range.

In addition to migratory birds and other wildlife, Blanchard Mountain supports resident species and neotropical birds that inhabit this area for their summer breeding season. The neotropical group of birds in particular face many challenges in their quest to maintain their populations given lengthy migrations, dwindling winter habitats, and the need to nest, raise and fledge young during the short summer season. An estimated 30 neotropical species utilize Blanchard Mountain, and three of these species are designated as species of concern. Certain species such as the Vaux's and black swifts have very restricted habitat requirements. The richness of neotropical migrant bird species in the area again reflects the diverse habitat

opportunities available in the Assessment Area ranging from the Puget Sound shoreline to the mountain summit.

To the west of the mountain is saltwater, and to the north, east, and south are fresh water streams, wetlands and Lake Samish. The salt water area of Samish Bay has a relatively shallow embayment with a steep rocky shoreline, eelgrass meadows, and expansive commercial shellfish beds. The mud and sand shallows are excellent foraging for migratory and wintering shorebirds. Large flocks of least and western sandpipers and dunlins can be seen whirling along this intertidal region. The nearshore waters offer good foraging for a variety of diving birds and large rafts of wintering dabblers and brant. At the head of Samish Bay, southwest from Blanchard Mountain, are some of the area's largest concentrations of migratory and wintering waterfowl, including flocks of trumpeter and tundra swans, and one of the most diverse wintering raptor concentrations in the Pacific Northwest. These raptors represent 15 species: 5 falcons; 2 buteos; 2 eagles; 1 harrier; 2 accipiters; and 2-3 owls.

Streams: The fresh water aquatic systems of Blanchard Mountain include numerous seasonal streams, perennial streams, wetland complexes, vernal pools, ponds, and two small lakes. The stream systems support resident fish populations, and anadromous fish use the lower stream reaches.

The rainfall of this area, and moist air from the adjacent Puget Sound, provides year-round surface moisture for plants and wildlife. These aquatic systems and climatic conditions enhance diversity and connectivity of the temperate mountain ecosystem for amphibians that require intact forest for their adult stage and aquatic systems for breeding. Additionally, neotropical birds and bats feed on the insects associated with water surfaces and stream corridors.

Caves and Cliffs: Some of the most unique habitat features of the mountain are the exposed rock faces and associated boulder fields. Throughout the Chuckanuts, including Blanchard and Colony mountains, unstable and fractured rock have given way to form boulder talus areas and complex cave networks. The consistent cool/moderated temperature, high humidity, and lack of disturbance in most of these caves provides ideal conditions for bat hibernacula. One of the larger cave networks was described by Clyde Senger (Senger 1999 pers. comm.) as multi-chambered with unusual moths, fleas, and wood rats (*Neotoma cinerea*). The caves also provide breeding sites for an unusual fungus fly *Speolepta leptogaster* not known elsewhere in North America. Only a few of the caves on Blanchard Mountain have been surveyed, and some are known to have hibernacula for the threatened Townsend's big-eared bat and other associated bat species. Nursery sites for this bat and other bat species have yet to be identified in the Chuckanuts. A captured lactating female *Myotis* along Oyster Creek and other records serve as evidence that nurseries are in the vicinity, yet their locations have not been found. The population status of reproducing females is not known.

The caves at Blanchard Mountain and surrounding areas also provide protective habitat for other species such as porcupine, black bear, and possibly bobcat, coyote and cougar. At this point in time the population status of most large mammals in the Chuckanuts is in question due to roading, cyclic timber harvest, recreationalists, and hunting.

Cliffs are another unique habitat feature in the Assessment Area. Of particular note is the large cliff face at Oyster Dome. More isolated cliffs are occupied by unique plant communities, such as lichens, and offer habitat for species such as cliff swallows, turkey vultures, common ravens and common nighthawks. With the expanding peregrine falcon population of the San Juans it is likely that peregrines would explore the Assessment Area, but as of yet, there have not been reports of regular, breeding season sightings of this

species in the area. Turkey vultures are seen regularly during the summer months around Blanchard Mountain and it would seem likely that these birds may be nesting nearby.

3.4.3 Wildlife Species

3.4.3.1 Introduction

The following summary of wildlife species associated with Blanchard Mountain was formulated from information in reports, data bases, field notes and personal interviews. A comprehensive wildlife inventory has not been conducted in this area, although local ecologists have proposed such a study. The following information is summarized by species or species associations. Species referred to in this summary are included within Appendix C, which has a comprehensive list of wildlife species believed to use the Assessment Area and nearby lands.

3.4.3.2 Amphibians

The diversity of amphibians in this area is of regional significance. There are 10 species of amphibians known to occur on Blanchard. These species include three frogs, five salamanders, one newt and one toad; which represent all the possible species occurring in northwest Washington with the exception of the cascade frog (*rana cascadae*) and the spotted frog (*rana pretiosa*). Both of those species are relatively rare and require habitat conditions not likely to occur in the Chuckanut Mountain Range.

The amphibians occurring on Blanchard represent a diverse group with a variety of habitat associations including fast moving perennial streams, permanent lakes and ponds, riparian areas, vernal pools and seeps, large down woody material, and undisturbed forest floors in riparian corridors. The population status of some of these species, such as the western toad, is of concern to biologists due to the loss of breeding habitat and disappearance of the toad from known breeding areas. Other species including the tailed frog, Pacific giant salamander and ensatina are uncommon species, requiring specific habitat conditions, and those species are vulnerable to habitat alterations. The absence of bull frogs (an exotic predator) in most systems associated with Blanchard Mountain indicates that predator is not currently a serious threat to other amphibians in the Assessment Area.

3.4.3.3 Reptiles

The reptiles of the Chuckanuts and Blanchard include six known species. This may not seem diverse by comparison to other regions; however, it does represent five of the six possible species naturally occurring in northwestern Washington. The species present in the Assessment Area include the rubber boa, which has been identified on Chuckanut Mountain, but not verified for Blanchard, and the western fence lizard which were introduced to the Chuckanuts and appear to be thriving.

3.4.3.4 Birds

A total of 150 bird species are associated with Blanchard Mountain (Appendix C). These species are associated with a wide variety of habitats located on, or connected with, the mountain, including marine, stream, wetland and terrestrial habitats. Included are those species which are known to consistently migrate over Blanchard Mountain on a seasonal basis. Of the total number of potential species in the Assessment Area, approximately 64 percent (96 species) of them are thought to breed and reproduce on the mountain. Thirty species are neotropical migrants. Eleven of the species identified are state and/or federal species of concern.

Of the total potential bird species in the area, 24 are associated with marine habitats and generally use nearshore and shoreline habitats at the base of the mountain. Some species in this category also use terrestrial or inland habitats as well, including the marbled murrelet, barrows goldeneye, common goldeneye, harlequin duck, common loon, grebes and several gulls. Marbled murrelet nesting has not been documented in the Assessment Area, although on one occasion they were heard circling immediately south of Blanchard Mountain. Other birds that are primarily associated with the lowlands immediately at the base of the mountain and the Samish River lowlands, are also known to migrate over the Chuckanuts with regularity.

One of the most significant groups of birds that use the Assessment Area are 19 species of raptors. These birds use the extensive forest habitats, including snags, forest edges, cliffs, ridgelines, stream corridors and open lands in the Assessment Area. Six owl species use the Assessment Area, of which four are known to breed on the mountain, including great horned, barred, northern pygmy, and saw-whet. The western screech owl is suspected to nest in the area, but it has not been confirmed. Most owl species found in the region also are present in the Assessment Area. Owls not present are the spotted owl and long-eared owl, both of which are rare within the region. Barn and short eared owls also are not believed to be present in the Assessment Area since they only occasionally hunt the balds and clear-cuts, and they breed in the lowlands.

Bald and golden eagles regularly migrate over Blanchard Mountain. Bald eagles also are common residents of the Assessment Area, with at least one known nest territory located on Whitehall Creek. Ospreys migrate over the area, and they have been reported to nest near Colony Creek.

Accipiters are common residents and nonresidents, with the exception of goshawk which are sighted irregularly. Falcon species known to use the Assessment Area include merlin, kestrel and peregrine. Those species have been observed regularly and are thought to hunt in the area year-round, although no known nesting of these species has been reported on the mountain. The red-tailed hawk is a breeding resident of the mountain and can be observed skulking for prey in the understory of the mature forests as well as in clearcuts.

Six species of woodpeckers are known to reside and to breed on Blanchard Mountain (Appendix C). The breeding status of Lewis's woodpecker within the Assessment Area needs to be verified. All species of *Picidae* (Appendix C) appear to be thriving in low to moderate elevations on and around Blanchard Mountain. Pileated woodpeckers, a state candidate species, are relatively common and are known to frequent the large old growth stumps (Douglas fir), snags, and downed logs for carpenter ants and other preferred prey. The number of pileated woodpecker breeding pairs on Blanchard has not been determined and needs to be addressed in order to maintain a viable and healthy breeding population.

As mentioned earlier, at least 30 species of neotropical migrant birds use Blanchard Mountain during the summer months, and this diversity of species reflects the variety of habitats available in the Assessment Area. All of these species most likely breed within the Assessment Area or adjoining lands, although breeding sites have not been confirmed for some species, such as the black swift, Vaux's swift, common nighthawk, hermit thrush, and northern rough winged swallow. The presence of mature conifer forests, waterfalls, large snags, cliffs, balds and other suitable habitats makes the habitat diversity of Assessment Area valuable for neotropical migrant birds. Although only some of the neotropical species have been classified as sensitive (Vaux's swift, olive sided flycatcher and willow flycatcher) all of the neotropical migrant species populations are at risk due to many factors, such as: loss of winter habitat, pesticides, and in some locations, the loss of summer breeding habitat.

3.4.3.5 Mammals

The mammals of Blanchard are the most difficult group to describe due to the lack of verified sightings and limited data available. An estimated 45 mammal species were identified for the Blanchard Mountain Assessment Area and vicinity, and of these, the small mammals are the most difficult to document without systematic field surveying.

The best documented group of mammals occurring on Blanchard are bats. The diverse population of bats in the Chuckanut and specifically Blanchard Mountain represent 10 species. This species diversity is equal to all of the species known to occur in western Washington, except for the small footed myotis which has only been found at one location in Washington west of the Cascade Mountain Range crest. Additionally, the hoary bat has only been recorded on Chuckanut and Colony Mountain (Essinger 1999). Four bats are federal candidate species or species of concern. The Townsend's big-eared bat is a federal and state candidate species, and it also is the bat species of primary interest on Blanchard because of documented cave hibernacula and probable maternity or nursery sites in caves on the mountain (Senger 1991). The habitat available on Blanchard is a significant factor in the survival and successful reproduction of these bats since they do not migrate much further than 30 miles. One of the caves in the Assessment Area apparently serves as the only known regional winter hibernation site for the Townsend's big-eared bat.

During the non-dormant seasons, the bats tend to forage at night and roost during the day. The bats usually roost at sites other than the hibernacula or nurseries. Bats are very sensitive to disturbance. Human disturbance of bats in torpor, or in a nursery, can be an extreme stress for them and can cause abandonment of the young and possibly death. Few natural habitat sites have been identified for the Townsend's big-eared bat; therefore, site specific mapping and the identification of hibernacula, nurseries and roosts would be extremely useful for protecting and monitoring this population on Blanchard Mountain.

The habitats utilized by all bats on Blanchard vary depending on season, activity and species. Habitat features preferred by these species are ponds, lakes or streams. Mature forests with snags also provide important habitat for foraging, roosting and potential maternity sites. The high diversity of moths associated with forests and rock outcrop balds in the Chuckanut Mountains (refer to Section 3.5: *Invertebrates*) is another probable reason for the rich, diverse, and unique bat population found there.

With the presence of the diverse breeding owl populations, it can be surmised that an abundant small mammal population exists with certain species having been identified. These species include the mountain beaver and the snowshoe hare.

Cougars have returned to the Chuckanut and Blanchard mountain areas with reported sightings increasing. Reports of black bear are few and most reports are of young bears. Black tailed deer of the mountain are suffering from hair loss and certain sightings have been of deer in poor health. Coyotes are heard on Blanchard and are thought to be denning there. Bobcat are listed in numerous reports for the area, but are rarely encountered or reported as actual sightings. River otter have been observed on Chuckanut Drive near Oyster Creek, as have weasel and raccoon. Beaver and muskrat were in the past relatively common species associated with large wetland complexes of upper Whitehall, Colony, and Oyster Creek systems. Most beaver and muskrat have been trapped out of those streams. Additionally, many wetlands in those stream systems have been drained, and continue to be drained, due to the incorrect perception that beaver dams block fish passage. The loss of beaver complexes has greatly reduced habitat values and diversity for those and other aquatic dependent species throughout the Chuckanut Mountain Range.

3.5 Invertebrates

The invertebrate species information available for the Chuckanut, Blanchard and Colony mountain area indicate unique conditions and regionally significant diversity for Lepidopterans (moths and butterflies.) Surveys conducted on Chuckanut Mountain have resulted in a collection of over 170 species of noctuid moths, and many of those have been recorded as state and regional records. Appendix B provides a comprehensive list of invertebrates known or believed to be present in the Assessment Area or nearby lands. Nearly 30 species of butterflies also have been randomly recorded in forested glades and near wetlands of the area. Collectively these species indicate an area of high ecological value and one that warrants a sophisticated study to map and document, species, host plant communities and sites of ecological significance

3.6 Fish Habitat and Species

Of the 16 fish species that use Blanchard Mountain and downstream areas, nine are anadromous and all, except smelt, are listed as threatened, candidate, or species of concern. Fish species that use the Assessment Area streams and downstream reaches are described in this report according to the two Watershed Administrative Units (WAU): Friday Creek/Samish River and Samish Bay (Figure 8).

A comprehensive inventory of fish and stream macroinvertebrate species has not been conducted for this area; therefore, these descriptions were formulated from information in reports, data bases, field notes and personal interviews with Washington Department of Fish and Wildlife fisheries biologists Don Hendrick, Jim Johnston, and Doug Huddle. Species referred to in this summary are included within Appendix C, which has a comprehensive list of all fish species believed to use streams in the Assessment Area or in downstream reaches.

Friday Creek/Samish River Watershed: The Samish River is the largest downstream river from Blanchard Mountain. This river is fed by streams flowing from the east side of Blanchard Mountain and supports a significant population of resident and anadromous fish. Bear Creek, and an unnamed tributary to the south, drain north and east from Lizard Lake on Blanchard Mountain, they then converge and feed into Friday Creek which drains from Lake Samish and is a major tributary to the Samish River (Figure 8). A fish hatchery located on Friday Creek is the oldest hatchery in the state (established in 1899), and it produces approximately 15 percent of the Chinook run in Puget Sound (Skagit County Dept. of Planning 1995).

Anadromous species in the Friday Creek/Samish River WAU system include fall chinook, coho, chum salmon, and winter steelhead, searun cutthroat trout, and smelt. Anadromous fish have been recorded in Friday Creek, the lower reaches of Bear Creek and the unnamed tributary to Bear Creek. A small number of sockeye also return to the Samish River system which is connected to Lake Samish. Resident fish in this WAU include cutthroat trout, eastern brook trout, kokanee, squaw fish, pea-mouthed cub and sculpin. Two other independent streams flow from the north slope of Blanchard into the north end of Lake Samish. The lower reaches of these streams support coho and possibly kokanee and resident cutthroat trout.

The anadromous fish species occurring in the Friday Creek/Samish River WAU are a mix of native and nonnative stocks, all of which are either federally listed species or species of concern. The chinook are thought to have been native historically; however, the stock currently found in the watershed primarily originated from Green River stocks that were introduced in the 1950's. The chinook salmon that use the Samish River are estimated to comprise 15 to 25 percent of the total Puget Sound chinook run.

The coho of this WAU are of mixed origin, with some Green River stocks and native Samish River stocks present. Coho require year-round rearing habitat including shaded pools, cool temperatures and consistent flows. Protection from flow extremes and flash events is very important for this species. The majority of coho spawn naturally in nearly all the tributaries of the Samish and the returns range between 3,000 and 11,000 fish which contribute up to 4 percent of the total Puget Sound coho salmon run.

The chum salmon of the Samish River are of both native and Hood Canal stocks, and they primarily use the lower reaches of the system near the estuary. The native stocks were historically one of the most productive in the state but were depleted by egg collection in the 1940's and 1950's.

The steelhead stocks consist of two distinct winter runs, native stocks and introduced Chambers Creek stocks. The steelhead population of the system is supplemented by 30,000 to 40,000 fry that have been introduced to the system each year since 1995. Steelhead are declining in this system and these declines are attributed to habitat loss, low flows, high water temperature, and over fishing.

Searun cutthroat trout are native to the Friday Creek/Samish River WAU and utilize the upper reaches of all accessible tributaries. These fish require rearing habitat for up to two years and are vulnerable to sedimentation, storm events, low flow, and high temperatures. Information on lamprey and bull trout for this system was not available, however these species may be present.

Samish Bay Watershed: The Blanchard Mountain streams associated with the Samish Bay watershed are Oyster Creek, Whitehall Creek, and Colony Creek (Figure 8). Oyster Creek drains the north side of Blanchard Mountain, and an introduced chum salmon population successfully spawns in the first mile of that creek. Further upstream, the Oyster Creek stream gradient substantially increases resulting in white water cascades, which would block passage of some anadromous species, however, coho and sea run cutthroat can pass through these rapids to utilize the upstream areas.

Resident cutthroat trout, as well as introduced eastern brook trout, are present in the Oyster Creek streams. Native searun cutthroat also use this stream, and those populations were supplemented with resident stock from Lake Whatcom during 1920's, 1930's and 1970's. It is estimated that approximately 100-200 searun cutthroat return to Oyster Creek annually. Pacific and brook lamprey also possibly are present in this system, as are sculpin and other small fresh water fish species. The current status of fish in this system is unknown and surveys are needed.

Searun and resident cutthroat, and eastern brook trout reported, were more abundant in the Oyster Creek system earlier this century due to the historic presence of wetland habitat and beaver ponds. Some, or possibly most, of those beaver ponds were drained during past decades.

Whitehall Creek (Figure 8) is impassable approximately 1/2 mile upstream from Samish Bay due to the old Blanchard community water reservoir which is a fish barrier. Suitable habitat for chum salmon, and possibly searun cutthroat and coho salmon, exists below that reservoir. Resident cutthroat and eastern brook trout are likely present in Whitehall creek above the reservoir.

Colony Creek is an independent stream system with headwaters in a wetland complex on the southeast side of Blanchard Mountain (Figure 8). Little is known about this wetland, yet it is speculated that it may be the site of a small heron nesting colony and it also may support a variety of fish and amphibian species. An active osprey nest also has been documented for the Colony Creek area. From the Colony Creek headwaters, the stream flows south and west around Colony Mountain, at which point it then flows northwest to Samish Bay. This stream supports anadromous fish including chum salmon, searun cutthroat,

and possibly coho. Detailed information for this stream and fish populations was not available at the time of this assessment.

Historically, many wetlands associated with Colony Creek were drained. These actions combined with the historic construction of rail lines, and the more recent construction of roads, most likely has affected rearing habitats in the watershed. Historically most of the stream corridor has been logged. The more recent rural residential development also has removed and encroached on portions of the riparian habitat.

Overview: Overall, streams on Blanchard Mountain and in downstream areas provide important habitats for a variety of anadromous and resident fish species. The diversity and quality of fish resources in this area is due to the variety of high quality habitats found within the streams, estuaries, marine shoreline, and close proximity to salt water.

The headwaters of all the streams described in this section originate in part, or exclusively on, Blanchard Mountain. Maintenance of high water quality and fish habitats in those headwaters is essential for maintaining and improving healthy downstream fish habitats and fish populations.

3.7 Scenic Resources

3.7.1 Scenic Resource Management

Scenery management is necessary because the public is concerned about the quality of its environment, and these environments fulfill physiological and psychological needs. The goal of scenery management should be to create and to maintain landscapes that have high scenic diversity, harmony, and unity for the human environment. The three primary areas of management concern within the Scenic Management System (SMS) are: (1) landscape character; (2) visual sensitivity; and (3) scenic integrity. These topics are reviewed here as they pertain to the Blanchard Mountain Assessment Area.

3.7.1.1 Landscape Character

The Chuckanut Mountain Range, including Blanchard Mountain, is the only landscape in Puget Sound where the Cascade Mountains descend to Puget Sound. The view of Blanchard Mountain is particularly unique due to its abrupt rise from the Puget Sound waters to the west and from the Skagit Valley farmlands to the south. The dramatic contrasting form and scale of Blanchard Mountain in relation to its sea-level surroundings gives the mountain a definitive landscape character unique to Washington State, and more specifically to the Puget Sound Basin.

Views from within the Blanchard Mountain Assessment Area reveal a number of landscape attributes which further define Blanchard as culturally unique. These features are particularly rare when placed in context of Blanchard Mountain's juxtaposition within the surrounding landscape. Key features within and adjacent to the Assessment Area include: a coastal mountain range adjacent to Puget Sound and the San Juan Islands, large contiguous areas of 50-70 year-old forests; peaks and roadsides that provide panoramic views; cliffs; caves; rock outcrop balds, an intricate trail system; a variety of streams and wetlands, including two lakes near the mountain summit. The diversity and harmony found in views from and to Blanchard Mountain gives the area a high scenic value.

3.7.1.2 Visual Sensitivity

Landscape sensitivity addresses the relative importance and vulnerabilities of what is seen and perceived in the landscape. It is a function of many essential, interconnected considerations such as landscape details,

type and number of viewers, duration of view, and other factors. Blanchard is currently predominantly a primitive area, and therefore provides features important for constituents drawn to such areas.

The intricate trail system that passes through contiguous 50-70 year old forests, along streams, and to overlooks with panoramic views suggests a high sensitivity rating for this area. These sensitivity values could be substantially altered with land use practices such as timber harvesting, road construction and rural residential development in the surrounding lowlands.

3.7.1.3 Scenic Integrity

Scenic integrity is used to describe site characteristics in relation to management standards and desired future conditions. This assessment did not include a detailed evaluation of scenic integrity, due to the needed to fully assess potential future land management options. The DNR is considering developing a landscape management plan for this area, and scenic resources could be included as part of that process. Perspectives for a potential scenic integrity evaluation for the Assessment Area are provided here.

A sensitivity analysis of Blanchard Mountain would predict changes to ecosystems and landscapes as a result of proposed long-term management. The changes to the scenic resources, and to the viewers perceptions of those values, could then be used to determine the benefits or disadvantages of proposed future land use practices. This process would identify whether irreversible or irretrievable commitment of public scenic resources is being made.

Within this evaluation process, the highest ranking is applied to landscapes having little to no deviation from the characteristics valued by viewers. In other words scenic views which appear to be "complete" or "perfect", could be degraded due to land management activities that substantially alter the context and character of these scenic resources.

Timber harvesting and road building would result in the greatest amount of scenic resource alteration, as compared with other potential activities proposed for the Assessment Area. By removing mature blocks of forest, thus fragmenting the continuity of the existing forest, the context and character of the scenic values could be substantially altered.

3.7.2 Primary Scenic Views

Scenic resource values of Blanchard Mountain are obtained from views of the mountain, as well as views from the mountain. The following describes the primary attributes of each.

Views to the Assessment Area: Blanchard Mountain is a dominant topographic feature viewed from surrounding areas including Interstate-5, Chuckanut Scenic Drive and other areas within the Samish and Skagit River floodplains (Figures 1-3). A majority of the terrain surrounding the mountain ranges from 0 to 500 ft elevation, and a view from near Edison, Washington is provided in Photo 12 in Appendix A.

Views from the Assessment Area: Scenic viewing while on the mountain can consist of a variety of perspectives including views within forests and along lakes and streams, as well as panoramic views over the surrounding terrain and the Puget Sound. Photos 1-11 provide perspectives of the distant views.

Samish Overlook: Samish Overlook is accessible by the B-2000 road (Figure 3). The view point is at the top of a steep slope that extends to Puget Sound and only approximately 2,000 horizontal feet from the Puget Sound shoreline. Clearcut timber harvest during 1988, combined with the topographic location, provides panoramic vistas of the following areas (Photos 1-5 Appendix A):

- San Juan Island archipelago, Samish Bay/Puget Sound and Samish/Skagit River floodplain farm lands
- Olympic and Cascade Mountain Ranges
- Northern reaches of the Chuckanut Mountain Range including southern edge of Larrabee State Park
- Contiguous 50-70 yr.-old forest to the north with some young clearcuts on state and private land
- Old-growth coniferous forest (300 yrs-old) on the western valley wall of the Oyster Creek drainage

Oyster Dome: The distant views are to the southwest, west, and northwest, and they include a similar panorama as seen from Samish Overlook. However, scenic resources from the Oyster Dome provide a different value to the user than the Samish Overlook due to its isolated location (2-3 miles) from roads and the mature forest that surrounds that site.

B-1000 and B-2000 Roads: The DNR B-1000 and B-2000 roads at the edge of the Assessment Area are at 900 ft. to 1,200 ft. elevation (Figure 3). Numerous small roadside pull-outs are available along these roads for views of distant features. Clearcut timber harvest below these roads from 1986 to 1992 has created the forest openings for vistas. These openings combined with the topographic elevation provide the following vistas from the south, east and north sides of Blanchard Mountain, and these views include:

Southerly View (Photos 10 and 11 Appendix A):

- San Juan Island archipelago, Samish Bay/Puget Sound and Samish/Skagit River floodplain farm lands
- Cascade and Olympic Mountain Ranges
- Samish and Skagit River floodplain farm lands

Easterly View (Photo 9 Appendix A):

- Mount Baker, Mount Shuksan, Lookout Mountain and Anderson Mountain
- A patchwork of mature and young forest on private and state land
- Samish Lake region and associated river valleys
- Interstate-5 corridor

Northerly View (Photos 6-8 Appendix A):

- Northern reaches of the Chuckanut Mountain Range, including the southern edge of Larrabee State Park
- Patchwork of mature and young forest on private and state land
- Samish Lake region and associated river valleys
- Interstate-5 corridor

4.0 CULTURAL AND HISTORIC RESOURCES

4.1 Pre-European Contact Period

Native American cultural groups inhabited the vicinity of Samish Bay prior to the period when ethnic European descendants settled in the area. A comprehensive review of cultural resources in the Samish Bay and Blanchard Mountain areas was not conducted for this assessment; however, the Washington Office of Archaeology and Historic Preservation (OAHP) has one record of early habitation in the vicinity. This record shows the presence of a midden site on the Puget Sound shoreline approximately 2.5 miles northwest of the Assessment Area (Table 5).

Table 5. Archaeological and historical sites in the Blanchard Mountain Assessment Area or within approximately three miles of that area (Office of Archaeology and Historic Preservation, June 1999).

Site number	Site name or description	Approximate distance from Assessment Area
45-WH-501	Prehistoric midden of mixed shellfish species	2.5 miles
37-11	Quarry, 1978 abandoned	2.5 miles
---	Railway tunnel, 1912	2.5 miles
---	Railway tunnel, 1912	2.5 miles
---	Two 19th century warehouses	0.5 miles
---	Fravel (John) squatters claim, 19th century	0.5 miles

4.2 Post-European Contact Period

A comprehensive review of historical resources from the post-European contact period in the Samish Bay and Blanchard Mountain areas was not conducted for this assessment; however, the Washington Office of Archaeology and Historic Preservation (OAHP) has five records of early habitation in the vicinity (Table 4). The five historic sites in the OAHP files primarily are associated with the early logging industry and settlement history, and all of them are located 0.5 to 2.5 miles from the Assessment Area. The following is a brief review of the earliest cultural activity during the post-European contact period.

Settlement and Logging: Euro-American settlers began arriving at Blanchard Mountain in the 1860s, attracted by available land, forests, and fertile soil in the Samish River floodplain (Roe 1995). In 1867 a small logging camp was established at the base of the mountain along what is now referred to as Blanchard Slough. The town of Blanchard (Figure 2) was established at its present site in 1885 (Roe 1995), and settlers accessed the area primarily by boat and barge over Samish Bay.

Timber harvesting played the most significant role in Blanchard Mountain's early history. During the late 1880's a majority of the logging occurred at the base and lower southern slopes of Blanchard Mountain. During 1886 the Blanchard Logging and Railroad Company began operating, and during subsequent years that company obtained other large parcels of land and forests on the mountain (Thompson 1989, Roe 1995).

During 1912 the Samish Bay Logging Company obtained the timber harvest rights for most of the southern half of Chuckanut Mountain (Thompson 1989). Harvesting by that company and others began in the 1910's, and it represented the beginning of the most extensive logging of Blanchard Mountain's original forest. By 1927, a majority of the original forest had either been logged or burned from Blanchard Mountain (Thompson 1989). Photographs from the early 1900's show some isolated clumps and individual stems of the original forest left after harvest (Thompson 1989).

Fires periodically occurred on the mountain, but the most significant was the fire of 1925 (Thompson 1989, Roe 1995). The fire of 1925 most likely was an intense burn fueled by extensive logging slash. It also appears this fire burned most of the scattered old-growth trees left after the original harvest, except for those protected by rock cliffs at the Oyster Dome and along the west side of Oyster Creek, and some small old-growth forest stands along the Puget Sound shoreline. The 76 acres of old-growth trees in the Assessment Area today are primarily limited to those sites (Figure 6). Most stumps remaining from the original old-growth trees on Blanchard Mountain (3 to 6 feet diameter) still retain scars from the historical fires.

Railroads: Railroad logging played a key part in the harvest of old-growth forest from Blanchard Mountain from the late 1800's until approximately 1927. The earliest timber transportation during the late 1860's through the mid-1880's was accomplished by using a horse tram railroad. The first steam locomotive in Skagit County was brought in by barge in 1888 to transport logs (Thompson 1989). During 1901 and subsequent years the Great Northern Railway constructed a rail line through Bow, Washington, Blanchard, Washington, and north along the edge of Samish Bay. This rail line opened up additional commercial markets to sell timber, and prompted the construction of a lumber mill in 1906 at Blanchard, Washington.

From the first years of 1900 through the 1920's railway mainlines were established up Oyster Creek, and around the southern base and eastern slope of Blanchard Mountain (location of the present day B-1000 road). Incline railways also were used to remove logs from the upper half of the mountain. These rail lines ran parallel to the slope rather than across it, and log rail cars were lowered via cable rolled out by a locomotive perched at top of the line. Blanchard Mountain had the distinction of having more incline railway than any other location in Skagit County (Thompson 1989).

Chuckanut Drive: Chuckanut Drive is a Washington State Scenic Roadway that extends along the Puget Sound shoreline and through the western portion of the Assessment Area (Figures 2 and 3). Construction first began in the late 1920's and the roadway was completed in the early 1930's. During the 1930's through the 1950's it gained national recognition as high quality scenic roadway. Today Chuckanut Drive draws tourists seeking scenic vistas of Puget Sound, San Juan Islands, the Chuckanut Mountain Range and farmlands between Blanchard and Mount Vernon, Washington.

5.0 SUMMARY OF KEY ATTRIBUTES

The NRCA criteria defined in Section 1.2 identifies six primary attributes that should be considered when evaluating an area for potential NRCA status. Those attributes are: (1) ecological values; (2) geological values; (3) scenic and low-impact public use values; (4) archaeological values; (5) areas with multiple values; and (6) areas threatened with incompatible or ecologically irreversible uses. The following is a summary of those types of attributes found in the Blanchard Mountain Assessment Area. Archaeological values were not evaluated in detail as part of this assessment, therefore they are not summarized here. Additionally, the sixth criteria (incompatible or ecologically irreversible uses) is dependent on proposed future management plans for the area, hence that criteria will be analyzed by the DNR staff at a later time.

5.1 Ecological Values

The high species diversity and regional species richness associated with Blanchard Mountain is diverse for northwest Washington. This diversity and species richness includes unique concentrations of vertebrate and invertebrate groups. Approximately 227 vertebrate fish and wildlife species use Blanchard Mountain, and adjacent lands and waters, including: 16 fish; 10 amphibians; 6 reptiles; 150 birds; 45 mammals; and 198 moth and butterfly species. Due to the coastal aspect of the mountain, 22 vertebrate species are primarily marine associated, while the remaining non-fish species are terrestrial or freshwater associated. Of the 16 fish species that use Blanchard Mountain and downstream areas, nine are anadromous and all, except smelt, are listed as threatened, candidate, or species of concern. Approximately eight percent (18 species) of the non-fish vertebrates are listed as threatened or endangered species, or as species of concern at the federal or state level. The diversity of the 10 amphibian species found on Blanchard Mountain is of regional significance. Additionally, at least 30 of the bird species are neotropical migrants that use Blanchard Mountain during the summer months.

The Chuckanut Mountain Range, including Blanchard Mountain, is a unique forested coastal mountain range extending over eight miles, and as a whole spanning over 25 square miles between the marine shoreline to the west and Lake Samish and Interstate-5 to the east. Although Blanchard Mountain is the focus of this assessment, it is also important to consider Blanchard as one portion of the larger landscape. Blanchard Mountain forests are partially isolated on the west, south and east sides due to either water, development or agricultural land uses (Figure 9). The connectivity of these forests to those on Chuckanut Mountain, and to forests of the North Cascades Mountain Range, is important for maintaining and potentially recovering species diversity in the Assessment Area.

Few old-growth forests remain on Blanchard and Chuckanut Mountains or within 10 miles. However, a majority of these mountains currently are covered by forests at least 50 to 70 years old. The habitat features of these large tracts of mature conifer forests are important for supporting species dependent on forest interior habitat and late successional conditions. Left undisturbed, these forests can develop old-growth characteristics including large diameter trees, multiple age and size classes, large standing dead trees (snags), and heavy accumulations of fallen trees on the forest floor (Franklin et al. 1986). These future types of contiguous forests would offer a habitat type that is fast disappearing from a majority of the low elevation areas of Puget Sound.

The caves found on Blanchard Mountains also provide unique habitats to wildlife species, particularly bats. The 10 species of bats that use the Chuckanuts, and specifically Blanchard Mountain, represent all of the

species known to occur in western Washington, except for the small footed myotis. Additionally, hoary bats have been recorded at Chuckanut and Colony Mountains. Four of the bat species that use the area are federal candidate species or species of concern. One of those species, the Townsend's big-eared bat, is a federal and state candidate species, and it also is the bat species of primary interest on Blanchard because of documented cave hibernacula and probable maternity or nursery sites in caves on the mountain. The habitat available on Blanchard is a significant factor in the survival and successful reproduction of these bats since they do not migrate much further than 30 miles. One of the caves in the Assessment Area apparently serves as the only known regional winter hibernation site for the Townsend's Big-eared bat.

5.2 Geological Values

Blanchard Mountain is the only area within the Puget Sound Basin where the metamorphic bedrock of the Cascade Mountain Range extends to Puget Sound. Additionally, there is no other area along the eastern edge of Puget Sound that has a coastal mountain range with such a dramatic topographic relief from salt water to mountain summit. All other areas along the eastern shoreline of Puget Sound (except for the Mount Erie area of Fidalgo Island) consist of unconsolidated glacial and alluvial deposits.

5.3 Scenic and Low-impact Public Use Values

Panoramic vistas from the Assessment Area include unique and high quality views of Puget Sound and the San Juan Island archipelago, farmlands of the Samish and Skagit River floodplains, and the Olympic and Cascade Mountain Ranges. The relatively contiguous expanse of 50-70 year old forest throughout much of the Assessment Area, and the adjoining Larrabee State Park, also plays an important role in creating unique landscape character and visual sensitivity.

The location of the Assessment Area within Puget Sound Basin, and the close distance to the major travel corridors of Interstate-5 and Chuckanut Scenic Drive, provides easy access for recreationists. This year-around, low elevation open space can provide long-term cultural and recreational values to residents of Washington State. That open space not only directly benefits visitors, but also maintains scenic viewsheds for travelers moving through the Interstate-5 and Chuckanut Drive travel corridors. The continued development and urbanization in the Puget Sound Basin will make conservation and open space recreation in this particular locale increasingly valuable.

5.4 Cumulative Multiple Values

The Blanchard Mountain Assessment Area provides a unique combination of ecological, topographical, scenic and low-impact recreation values within Washington State. Key attributes of this area include: (1) a unique coastal mountain range with a relatively intact mature forest; (2) rare cave habitat; (3) a high diversity of fish, wildlife and invertebrates; (4) an intricate trail system; (5) a high public interest; (6) and panoramic views of a large island archipelago and sea-level farm lands. These values combined with those conserved in adjoining Larrabee State Park help maintain many of the unique values and species assemblages found in the Chuckanut Mountain Range.

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APPENDICES

Appendix A - Photographs of the Blanchard Mountain Assessment Area.

Appendix B - Partial Plant Species List for the Blanchard Mountain Assessment Area, Larrabee State Park, and Vicinity.

Appendix C - Wildlife, Fish and Invertebrate Species in the Chuckanut Mountain Range.

APPENDIX A

Photographs of the Blanchard Mountain Assessment Area

BLANCHARD MOUNTAIN ASSESSMENT

See separate PDFs of photos.

Appendix A is photos of Blanchard Mountain NRCA Assessment

APPENDIX B

Partial Plant Species List for the Blanchard Mountain Assessment Area, Larrabee State Park, and Vicinity.

BLANCHARD MOUNTAIN ASSESSMENT

APPENDIX B. Partial list of vascular plant species of Larrabee State Park and the Blanchard Mountain Assessment Area.

Trees		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Bigleaf Maple	<i>Acer macrophyllum</i>	A,B,C,D
Bittercherry	<i>Prunus emarginata: var. mollis</i>	A,C
Black Cottonwood	<i>Populus trichocarpa</i>	A,C,D
Cascara	<i>Rhamnus purshiana</i>	C,D
Douglas Fir	<i>Pseudotsuga menziesii</i>	A,B,C,D
Grand Fir	<i>Abies grandis</i>	C,D
Lodgepole Pine	<i>Pinus contorta</i>	B,C
Pacific Madrone	<i>Arbutus menziesii</i>	A,B,C
Pacific Yew	<i>Taxus brevifolia</i>	B,C
Red Alder	<i>Alnus rubra</i>	A,B,C,D
Scouler's Willow	<i>Salix scouleriana</i>	A,B,C
Sitka Spruce	<i>Picea sitchensis</i>	A,B,C
Western Hemlock	<i>Tsuga heterophylla</i>	A,B,C,D
Western Paper Birch	<i>Betula papyrifera: var. commutata</i>	A,C
Western Redcedar	<i>Thuja plicata</i>	A,B,C,D
Western Yew	<i>Taxus brevifolia</i>	A
Shrubs and Vines		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Baldhip Rose	<i>Rosa gymnocarpa</i>	A,B,C
Black Huckleberry	<i>Vaccinium membranaceum</i>	A
Black Raspberry	<i>Rubus leucodermis</i>	A
Black Twinberry	<i>Lonicera involucrata</i>	A
Blackberry	<i>Rubus ursinus</i>	C,D
Blackcap	<i>Rubus leucodermis</i>	C
Cascade Mountain Ash	<i>Sorbus scopulina</i>	C
Coast Red/ Coastal Elderberry	<i>Sambucus racemosa: var. arborescens</i>	A,C
Common Snowberry	<i>Symphoricarpos albus</i>	A,C,D
Devil's Club	<i>Oplopanax horridum</i>	A,C,D
Douglas Maple	<i>Acer glabrum: var. douglasii</i>	C
English Holly	<i>Ilex aquifolium</i>	A,C
European Mountain-Ash	<i>Sorbus aucuparia</i>	
Evergreen Blackberry	<i>Rubus laciniatus</i>	A,C,D
Fool's Huckleberry/False Azalea	<i>Menziesia ferruginea</i>	A,C
Goatsbeard	<i>Aruncus sylvestris</i>	C
Hairy Honeysuckle	<i>Lonicera hispidula</i>	B,C
Hairy Manzanita	<i>Arctostaphylos columbiana</i>	B,C
Himalayan Blackberry	<i>Rubus discolor</i>	A,C,D
Honeysuckle	<i>Lonicera ciliosa</i>	C,D
Indian Plum	<i>Oemleria cerasiformis</i>	A,C,D
Low/Dull Oregon Grape	<i>Berberis nervosa</i>	A,B,C,D

Shrubs and Vines		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Marsh Cinquefoil	<i>Potentilla palustris</i>	A
Mockorange	<i>Philadelphus lewisii</i>	C
Oceanspray	<i>Holodiscus discolor</i>	A,B,C,D
Orange Honeysuckle	<i>Lonicera ciliosa</i>	
Oval-Leafed Huckleberry	<i>Vaccinium ovalifolium</i>	A
Pacific Willow	<i>Salix lucida</i>	A
Quaking Aspen	<i>Populus tremuloides</i>	D
Red Huckleberry	<i>Vaccinium parvifolium</i>	A,C,D
Red-Flowering Currant	<i>Ribes sanguineum</i>	A,C
Red-Osier Dogwood	<i>Cornus stolonifera</i>	D
Salal	<i>Gaultheria shallon</i>	A,B,C,D
Salmonberry	<i>Rubus spectabilis</i>	A,B,C,D
Serviceberry	<i>Amelanchier alnifolia</i>	A,B,C
Sitka Alder	<i>Alnus sitchensis</i>	C
Snow Bramble	<i>Rubus nivalis</i>	A
Stink Currant	<i>Ribes bracteosum</i>	
Swamp Gooseberry	<i>Ribes lacustre</i>	C
Tall Oregon Grape	<i>Berberis aquifolium</i>	B,C
Thimbeberry	<i>Rubus parviflorus</i>	A
Trailing Blackberry	<i>Rubus ursinus</i>	A
Vine Maple	<i>Acer circinatum</i>	A,C,D
Water Birch	<i>Betula occidentalis</i>	D
Western Crab Apple	<i>Malus fusca</i>	D
Wild Cranberry	<i>Vaccinium oxycoccos</i>	A
Ferns		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Bracken Fern	<i>Pteridium aquilinum</i>	A,C,D
Deer Fern	<i>Blechnum spicaul*</i>	A,C,D
Lady Fern	<i>Athyrium filix-femina*</i>	A,C,D
Leathery Grape-fern	<i>Botrychium multifidum</i>	A
Licorice Fern	<i>Polypodium glycyerliza</i>	A,C
Mountain Holly Fern	<i>Polystichum lonchitis</i>	A
Northern Maidenhair Fern	<i>Adiantum pedatum</i>	A,C
Oak Fern	<i>Gynocarpium dryopteris</i>	A
Spiny/ Spreading Wood Fern	<i>Dryopteris expansa</i>	A,B,C
Sword-Fern	<i>Polystichum munitum</i>	A,B,C,D

Herbaceous Plants		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Alaska Oniongrass	<i>Melica subulata</i>	B,C
American Vetch	<i>Vicia americana</i>	B,C
Baneberry	<i>Actaea rubra</i>	A
Barren Fescue	<i>Festuca bromoides</i>	C
Bedstraw	<i>Galium aparine</i>	C,D
Bentgrass	<i>Argrostis sp.</i>	A,D
Big-leafed Sandwort	<i>Arenaria macrophylla</i>	B,C
Black Gooseberry	<i>Ribea lacustre</i>	A
Blue Wildrye	<i>Elymus glaucus</i>	B,C
Broad-leafed Stonecrop	<i>Sedum spathulifolium</i>	C
Buckbean	<i>Menyanthes trifoliata</i>	A
Bull Thistle	<i>Cirsium vulgare</i>	A,C
Bunchberry	<i>Cornus unalaschkensis</i>	A
California Oatgrass	<i>Danthonia californica</i>	C,D
Canada Goldenrod	<i>Solidago canadensis</i>	A
Canada Thistle	<i>Cirsium arvense</i>	A
Chamisso's Cotton Grass	<i>Eriophorum chamissonis</i>	A
Clasping Twistedstalk	<i>Streptopua amplexifolius</i>	A
Coast Range Fescue	<i>Festuca subuliflora</i>	C
Columbia Brome	<i>Bromus vulgaris</i>	B,C
Common Cat Tail	<i>Typha latifolia</i>	A,C
Common Foxglove	<i>Digitalis purpurea</i>	A,C
Common Horsetail	<i>Equisetum arvense</i>	A,D
Common Plantain	<i>Plantago major</i>	A
Common Speedwell	<i>Veronica officinalis</i>	A,C,D
Common St. John's Wort	<i>Hypericum perforatum</i>	A
Common Velvet-grass	<i>Holcus lanatus</i>	B,C
Common Yarrow	<i>Achillea millefolium</i>	C
Cotton-Batting Plant	<i>Gnaphatium chilense</i>	A
Creeping Buttercup	<i>Ranunculus repens</i>	A
Crisped Starwort	<i>Stellaria crispa</i>	C
Dagger-Leafed Rush	<i>Juncus ensifolius</i>	A
Douglas' Water Hemlock	<i>Cicuta douglasii</i>	A
Enchanter's Nightshade	<i>Circen alpina</i>	A,B,C
English Daisy	<i>Bellis perennis</i>	A
European Bittersweet	<i>Solanum dulcamara</i>	A
Evergreen Violet	<i>Viola sempervirens</i>	C
False Lily-of-the-Valley	<i>Maianthemum dialatum</i>	A,B,C,D
Fendler's Waterleaf	<i>Hydrophyllum fendleri</i>	A,D
Field Mint	<i>Mentha arvensis</i>	A
Fir Clubmoss	<i>Lycopodium selago</i>	A
Fireweed	<i>Epilobium angustifolium</i>	A
Foamflower	<i>Tiarella trifoliata: var. trifoliata</i>	A
Foxtail Fescue	<i>Festuca megalura</i>	C
Fringecup	<i>Tellima grandiflora</i>	A,C
Giant Horsetail	<i>Equisetum sp.</i>	C

Herbaceous Plants		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Goatsbeard	<i>Aruncus sylvestris</i>	A
Gray Sedge	<i>Carex canescens</i>	C
Great Mullein	<i>Verbascum thapsus</i>	A
Hairy Cat's-Car	<i>Hypochaeris radicata</i>	A,B,C
Hairy Eyebright	<i>Euphrasia officinalis</i>	A
Hairy Rockcress	<i>Arabis hirsuta</i>	C
Hardhack	<i>Spirea douglasii</i>	A
Harsh Paintbrush	<i>Castilleja hispida</i>	C
Heart-Leaved Twayblade	<i>Listera cordata</i>	A
Herb Robert	<i>Geranium robertianum</i>	A
Hooker's Fairbell	<i>Disporum hookeri</i>	C
Indian Pond Lily	<i>Nuphar polysepalum</i>	C
Kneeling Angelica	<i>Angelica genus flexa</i>	A
Labrador Tea	<i>Ledum groenlandicum</i>	A
Large-Leafed Avens	<i>Geum macrophyllum</i>	A,B,C,D
Little Buttercup	<i>Ranunculus uncinatus</i>	A
Little Leaf Montia	<i>Montia parvifolia</i>	C
Little Prince's Pine	<i>Chimaphila menziesii</i>	B,C
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>	A
Meadow Buttercup	<i>Ranunculus acris</i>	A
Mountain Sweet Cicely	<i>Osmorhiza chilensis</i>	A,B,C
Nipplewort	<i>Lapsana communis</i>	A
Nodding Fescue	<i>Festuca subulata</i>	C
Nodding Onion	<i>Allium cernuum</i>	B,C
Northwest Sedge	<i>Carex concinnoides</i>	C
Nuttall's Peavine	<i>Lathyrus nevadensis</i>	
One Sided Wintergreen	<i>Orthilia secunda</i>	A
Orchard Grass	<i>Dactylis glomerata</i>	C
Oxeye Daisy	<i>Leucanthemum vulgare</i>	A
Pacific Bleeding-Heart	<i>Dicentra formosa</i>	A,C
Pacific Brome	<i>Bromus pacificus</i>	C
Pacific Silverweed	<i>Potentilla pacifica</i>	
Pathfinder	<i>Adenocaulon bicolor</i>	A,B,C
Pearly-Everlasting	<i>Anaphalis margaritacea</i>	A,C,D
Pinedrops	<i>Pterospora andromedea</i>	A
Pink Wintergreen	<i>Pyrola asarifolia</i>	A,C
Podfern	<i>Aspidotis densa</i>	C
Pondweed	<i>Potamogeton sp.</i>	C
Poor Sedge	<i>Carex pauperula</i>	C
Prairie Junegrass	<i>Koeleria cristata</i>	C
Prince's Pine/ Pipsisacwa	<i>Chimaphila umbellata</i>	A,B,C
Rattlesnake Plantain	<i>Goodyera oblongifolia</i>	A,B,C,D
Red Clover	<i>Trifolium pratense</i>	A
Red Columbine	<i>Aquilegia formosa</i>	A,C
Reed Canarygrass	<i>Phalaris arundinacea</i>	C
Ribwort	<i>Plantago lanceolata</i>	A

Herbaceous Plants		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Rockress	<i>Arabis sp.</i>	
Rosy Plectritis	<i>Plectritis congesta</i>	B,C
Round-Leafed Sundew	<i>Drosera rotundifolia</i>	A
Rowan Tree	<i>Sorbus aucuparia</i>	A
Running Clubmoss	<i>Lycopodium clavalum</i>	A
Scouring-Rush	<i>Equisetum hyemale</i>	C
Self-Heal	<i>Prunella vulgaris</i>	A,C
Sheep Sorrel	<i>Rumex acetosella</i>	AB,C
Siberian Miner's Lettuce	<i>Claytonia sibirica</i>	A
Siberian Montia	<i>Montia sibirica</i>	C
Siskiyou Gooseberry	<i>Ribes binominatum</i>	D
Skunk Cabbage	<i>Lysichitum americanum</i>	A,C,D
Slender Bog-Orchid	<i>Habenaria succata</i>	A
Slender-Stem Waterleaf/ Pacific Waterleaf	<i>Hydrophyllum tenuipes</i>	A
Slough Sedge	<i>Carex obnupta</i>	C,D
Small-Flowered Alumroot	<i>Heuchera micrantha: var. diversifolia</i>	A,C
Small-Flowered Forget-Me-Not	<i>Myosotis laxa</i>	C
Small Hop Clover	<i>Trifolium dubium</i>	A
Snow Thistle	<i>Sonchus sp.</i>	A
Soft Brome	<i>Bromus mollis</i>	B,C
Soft-Stemmed Bulrush	<i>Scirpus lacustris ssp. glaucus</i>	A
Spotted Coralroot	<i>Corallorhiza maculata</i>	A,B,C
Starry Solomon's Seal/ Star Flowered Solomon's Plume	<i>Smilacina stellata</i>	A,C
Stinging Nettle	<i>Urtica dioica</i>	A,B,C,D
Striped Coralroot	<i>Corallorhiza striata</i>	B,C,D
Stream Violet	<i>Viola glabella</i>	A
Swamp Horsetail	<i>Equisetum fluviatile</i>	A
Sweet Coltsfoot	<i>Petasites frigidus: var. palmatus</i>	C
Sweet-Scented Bed Straw	<i>Galium triflorum</i>	A,B,C
Tall Mannagrass	<i>Glyceria elata</i>	A,C
Three-Leaved Foamflower	<i>Tiarella trifoliata: var. trifoliata</i>	C
Tiger Lily	<i>Lilium columbianum</i>	A
Tufted Loosestrife	<i>Lysimachia thyrsiflora</i>	
Twayblade	<i>Listera sp.</i>	A
Twinsflower	<i>Linnea borealis</i>	A,B,C
Vanillaleaf	<i>Achlys triphylla</i>	
Wall Lettuce	<i>Lactuca muralis</i>	
Wallace's Selaginella	<i>Selaginella wallacei</i>	
Water-Parsley	<i>Oenanthe sarmentosa</i>	A,C,D
Water Smartweed	<i>Polygonum amphibium</i>	A
Waterpepper	<i>Polygonum hydropiperoides</i>	A
Western Dock	<i>Rumex occidentalis</i>	A
Western Fescue	<i>Festuca occidentalis</i>	B,C
Western Solomon's Seal/ Solomon's Plume	<i>Smilacina racemosa</i>	A,B,C

Herbaceous Plants		
COMMON NAME	SCIENTIFIC NAME	SOURCE
Western Starflower/ Broad Leafed Star Flower	<i>Trientalis latifolia</i>	A,B,C,D
Western Swamp Laurel	<i>Kalmia occidentalis</i>	A
Western Trillium	<i>Trillium ovatum</i>	A,B,C,D
Western Trumpet Honeysuckle	<i>Lonicera ciliosa</i>	A
White Clover	<i>Trifolium repens</i>	A
White-Flowered Hawkweed	<i>Hieracium albiflorum</i>	A,B,C
Wild Ginger	<i>Asarum caudatum</i>	A,C
Wild Strawberry	<i>Fragaria virginiana</i>	A
Wood Groundsel	<i>Senecio sylvaticus</i>	A
Woodrush	<i>Luzula parviflora</i>	A,C
Woods Strawberry	<i>Fragaria vesca</i>	B,C
Woolly Clover	<i>Trifolium microcephalum</i>	C
Woolly-Sunflower	<i>Eriophyllum lanatum: var. lanatum</i>	B,C
Yellow Pond Lily	<i>Nuphar polysepalum</i>	A
Youth-On-Age	<i>Tolmiea menziesii</i>	A,C,D

SOURCE KEY

A	Vascular Plant List for the Trail to Lily Lake. Janica Duemmel. Surveys conducted between 11 June and 10 October, 1998.
B	Tim Whal's 1997 Comparative Grassland Species Survey. Georgia Stralta/North Puget Sound. A detailed study of the flora of the Chuckanut balds. All are unpublished.
C	Washington State Parks and National Forest Inventory for Larrabee State Park. Species listed are from a partial list of vascular plant and wildlife species inventoried by C. Chappel on July 2-5 and 16, 1992. Included in the report are exotic species that have become established in forests, grasslands or wetlands, ie. has spread beyond trails, road edges or developed land.
D	Chuckanut Ridge Planned Development, Technical appendices, Appendix 5A. Part of the Draft EIS for Coyote Ridge Shooting Range. City of Bellingham, Department of Planning and Community Development. March 1996. Species listed are from the Wildlife Studies for the Proposed Chuckanut Ridge Planned Development Project - prepared by Shapiro and Associates, Inc. October, 1992.

APPENDIX C

Wildlife, Fish and Invertebrate Species in the Chuckanut Mountain Range

BLANCHARD MOUNTAIN ASSESSMENT

Vertebrate Species of Blanchard Mountain: a master list

The following species list is the most comprehensive list for Blanchard Mountain to date and is based on both reliable scientific sources and casual observations by experienced biologists and naturalists. The list is structured in taxonomic order by class, family and species. In addition to common and scientific name, information is provided for each species including federal and state status, occurrence by ecozone, abundance and seasonality.

The list contains recent verifiable sightings for specifically the Blanchard Mountain area, with the exception of a few historical records and certain inferences based on habitat similarities and connectivity between Blanchard and Chuckanut Mountains. Those species of record for Chuckanut but not verified for Blanchard and those of historical record are identified with a question mark.

The total number of species represented on this list equals 210 species + fish - 9 amphibians 6 reptiles 150 birds 45 mammals

Sources and contributors to the species list are:

- Brown, Herbert. 1991 *Selected species of the Chuckanut Mt. Crest.*
 1992 *Amphibians and Reptiles of Whatcom County and Bellingham.* (Notes on amphibians of Blanchard Mt.)
 Crabo, Lars. 1992-1996 Observations on Chuckanut Mountain, Whatcom County
 Drummond, David P. 1994-99. Observations from Blanchard and Colony Mts. *field notes*
 Eissinger, Ann. 1994-99. Observations from Blanchard and Colony Mts. *field notes*
 1995. Wildlife Species List for Whatcom County (Chuckanut Mountain)
 Jackson, Vikki. 1999. Observations from Chuckanut and Blanchard Mts. *Field notes*
 Randall, Kara. 1998. Bats captured on Oyster Creek and the Chuckanuts
 Senger, Clyde M. 1992. *Checklist of Mammals of Whatcom County, Washington.*
 - *records of bats occurring on Blanchard Mountain*
 Wahl, Terence. 1993. A Guide to Bird Finding in Washington (*Chuckanut Mountain*)
 1995. *Birds of Whatcom County*

Codes used to indicate status, abundance and seasonality are as follows:

- * species that are expected, but not verified by those cited or by the authors
 ? Species on record for Chuckanut Mt. but not verified for Blanchard
 ?? Species of record but in question, or possible vagrants

STATUS	FE Federal Endangered FT Federal Threatened FC Federal Candidate FSC Federal Species of Concern	SE State Endangered ST State Threatened SC State Candidate SP State Protected
ECOZONE	C - Coastal (marine, shoreline and estuarine) L - Lowlands (sea level to 1,000 feet elevation)	M - Montane (mountain areas over 1,000 feet elevation) FOM - Fly Over Migration (for species primarily associated with Blanchard Mt. as a migratory flight path)
ABUNDANCE	C (common) R (rare)	U (uncommon) - (undetermined)
SEASONALITY	P (permanent residence, breeder) S (summer, breeder) - (undetermined)	W (winter resident) SF (spring/fall, migrant)

FISH

Fish Species of Blanchard Mountain Stream Systems: Samish River System¹ (Lake Samish & tributaries (unnamed), Friday Creek, Bear Creek, unnamed creek) Oyster Creek², Whitehall Creek³ and Colony Creek⁴.

common name	genus species	status	Stream association (1-4)
chinook salmon	<i>Oncorhynchus tshawytscha</i>	FT/SC	1
coho salmon	<i>O. kisutch</i>	FSC	1,2,3,4
chum salmon	<i>O. Keta</i>	FSC	1,2,3,4
sockeye salmon	<i>O. Nerka</i>	FSC	1
kokanee	<i>O. Nerka</i>		1
steelhead	<i>O. Mykiss</i>	FSC	1
searun cutthroat trout	<i>Oncorhynchus clarki</i>	FSC	1,2,3,4
resident cutthroat trout	<i>Oncorhynchus clarki</i>		1,2,3,4
eastern brook trout	<i>Salvelinus fontinalis</i>		1,2
resident rainbow trout			1 others*
smelt			1
pacific lamprey	<i>Lamperla tridentatus</i>	FSC/SC	1*
river lamprey	<i>Lamperla ayresi</i>	FC/SC	1*
sculpin sp.	?		1,2,3,4*
squaw fish	<i>Ptychocheilus</i> sp.		1
pea mouthed chub	?		1
bull trout	<i>Salvelinus confluentus</i>		presence has not been documented for this area to-date.

AMPHIBIANS

common name	genus species	status	ecozone	abundance/seasonality
AMBYSTOMATIDAE				
northwestern salamander	<i>Ambystoma gracile</i>		L-M	- P
long-toed salamander	<i>Ambystoma macrodactylum</i>		L-M	- P
Pacific giant salamander	<i>Dicamptodon ensatus</i>		L-M	- P
PLETHODONTIDAE				
ensatina	<i>Ensatina eschscholtzi</i>		L-M	- P
western redback salamander	<i>Plethodon vehiculum</i>		L-M	- P
SALAMANDRIDAE				
roughskin newt	<i>Taricha granulosa</i>		L-M	- P
BUFONIDAE				
western toad	<i>Bufo boreas</i>		L-M	- P
HYLIDAE				
pacific tree frog	<i>Hyla regilla</i>		L-M	C P
RANIDAE				
red-legged frog	<i>Rana aurora</i>		L-M	- P
REPTILES				
Western fence lizard	<i>Sceloporus occidentalis</i>		C-L	introduced
ANGUIDAE				
northern alligator lizard	<i>Elgaria coerulea</i>		C-M	P
NATRICINAE (subfamily)				
northwestern garter snake	<i>Thamnophis ordinoides</i>		L-M	- P
common garter snake	<i>Thamnophis sirtalis</i>		L-M	- P
western garter snake	<i>Thamnophis elegans</i>		L-M	- P
rubber boa?	<i>Charina bottae</i>		L	R P

BIRDS

common name/status	genus/species	status	ecozone	abundance/seasonality
GAVIIDAE				
common loon	<i>Gavia immer</i>	SC	C	C W
pacific loon	<i>Gavia pacifica</i>		C	C W
red-throated loon	<i>Gavia stellata</i>		C	C W
PODICIPEDIDAE				
western grebe	<i>Aechmophorus occidentalis</i>		C	C W
horned grebe	<i>Podiceps auritus</i>		C	C W
red-necked grebe	<i>Podiceps grisegena</i>		C	C W
pieb-billed grebe*	<i>Podilymbus podiceps</i>		L-M	U .
PHALACROCORACIDAE				
double-crested cormorant	<i>Phalacrocorax auritus</i>		C	C P
ARDEIDAE				
great blue heron	<i>Ardea herodias</i>		C-M	C P
green-backed heron*	<i>Butorides striatus</i>		L	U P
ANATIDAE				
trumpeter swan	<i>Cygnus buccinator</i>		C-L	U FOM
tundra swan	<i>Cygnus columbianus</i>		C-L	U FOM
greater white-fronted goose	<i>Anser albifrons</i>		C-L	U FOM
brandt	<i>Branta bernicla</i>		C	U SF-W
Canada goose	<i>Branta canadensis</i>		C	C P
wood duck	<i>Aix sponsa</i>		L-M	C P
American wigeon	<i>Anas americana</i>		C-L	C FOM
northern pintail	<i>Anas acuta</i>		C-L	C W
green-winged teal	<i>Anas crecca</i>		C-L	C W
mallard	<i>Anas platyrhynchos</i>		C-M	C P
bufflehead	<i>Bucephala albeola</i>		C-M	C P
common goldeneye	<i>Bucephala clangula</i>		C	C W
Barrow's goldeneye	<i>Bucephala islandica</i>		C	C W
oldsquaw	<i>Clangula hyemalis</i>		C	U W
harlequin duck	<i>Histrionicus histrionicus</i>		C	C W
hooded merganser	<i>Lophodytes cucullatus</i>		C	U P
black scoter	<i>Melanitta nigra</i>		C	SF
surf scoter	<i>Melanitta perspicillata</i>		C	C W
common merganser	<i>Mergus merganser</i>		C-L	U W
red-breasted merganser	<i>Mergus serrator</i>		C-L	C W

	common name/status	genus/species	status	ecozone	abundance/seasonality
RALLIDAE					
	Virginia rail?	<i>Rallus limicola</i>			
	sora ?	<i>Porzana carolina</i>			
CHARADRIIDAE					
	black-bellied plover	<i>Pluvialis squatarola</i>		C	C W-SF
	killdeer	<i>Charadrius vociferus</i>		C-L	C P
SCOLOPACIDAE					
	black turnstone	<i>Arenaria melanocephala</i>		C	C W
	common snipe	<i>Gallinago gallinago</i>		L	U P
	lesser yellowlegs*	<i>Tringa flavipes</i>		C-L	U SF
	greater yellowlegs	<i>Tringa melanoleuca</i>		C-L	C SF
LARIDAE					
	California gull	<i>Larus californicus</i>		C	C SF
	ring-billed gull	<i>Larus delawarensis</i>		C-L	C P
	glaucous-winged gull	<i>Larus glaucescens</i>		C-L	C P
	western gull	<i>Larus occidentalis</i>		C	U W
	Bonaparte's gull	<i>Larus philadelphia</i>		C	C SF
	mew gull	<i>Larus canus</i>		C	C W
	caspian tern	<i>Sterna caspia</i>		C	C S-F
CATHARTIDAE					
	turkey vulture	<i>Cathartes aura</i>		L-M	C S,SF
ACCIPITRIDAE					
	bald eagle	<i>Haliaeetus leucocephalus</i>	FT/ST	C-M	C P
	golden eagle	<i>Aquila chrysaetos</i>	SC	M	U FOM
	northern harrier	<i>Circus cyaneus</i>		C-L	C P
	Cooper's hawk	<i>Accipiter cooperii</i>		L-M	C P
	northern goshawk	<i>Accipiter gentilis</i>	FSC/SC	M	U SF,W,FOM
	sharp-shinned hawk	<i>Accipiter striatus</i>		L-M	U P
	red-tailed hawk	<i>Buteo jamaicensis</i>		L-M	C P
	rough-legged hawk	<i>Buteo lagopus</i>		L	C SF,W, FOM
	Swainson's hawk	<i>Buteo swainsoni</i>			R FOM
	osprey	<i>Pandion haliaetus</i>		C	U FOM
FALCONIDAE					
	merlin	<i>Falco columbarius</i>	SC	L-M	U SF,W
	peregrine falcon	<i>Falco peregrinus</i>	FE/SE	C-M	C P
	American kestrel	<i>Falco sparverius</i>		L-M	U SF,W,S?

	common name/status	genus/species	status	ecozone	abundance/seasonality
PHASIANIDAE	ruffed grouse blue grouse	<i>Bonasa umbellus</i> <i>Dendragapus obscurus</i>		L-M M	U P R -
COLUMBIDAE	band-tailed pigeon rock dove mourning dove	<i>Columba fasciata</i> <i>Columba livia</i> <i>Zenaidura macroura</i>		L-M L L-M	C SF,S C P U P
ALCIDEA	marbled murrelet	<i>Brachyramphus marmoratus</i>	FT/ST	C-M	R S (FO)
STRIGIDAE	northern saw-whet owl great horned owl western screech-owl barred owl northern pygmy owl snowy owl	<i>Aegolius acadicus</i> <i>Bubo virginianus</i> <i>Otus kennicottii</i> <i>Strix varia</i> <i>Glaucidium gnoma</i>		L L-M L-M L-M L-M L	U P C P U P C P C P R FOM
CAPRIMULGIDAE	common nighthawk	<i>Chordeiles minor</i>		L-M	C S
APODIDAE	Vaux's swift black swift	<i>Chaetura vauxi</i> <i>Cypseloides niger</i>	SC	L-M L-M	U S U S
TROCHILIDAE	rufous hummingbird	<i>Selasphorus rufus</i>		L-M	C S, SF
ALCEDINIDAE	belted kingfisher	<i>Ceryle alcyon</i>		L-M	C P
PICIDAE	northern flicker pileated woodpecker downy woodpecker hairy woodpecker red-breasted sapsucker Lewis's woodpecker??	<i>Colaptes auratus</i> <i>Dryocopus pileatus</i> <i>Picoides pubescens</i> <i>Picoides villosus</i> <i>Sphyrapicus ruber</i> <i>Melanerpes lewis</i>	SC	L-M L-M L-M L-M L-M -	C P C P C P C P C P -

	common name/status	genus/species	status	ecozone	abundance/seasonality
TYRANNIDAE					
	eastern kingbird??	<i>Tyrannus tyrannus</i>		-	-
	olive-sided flycatcher	<i>Contopus borealis</i>	FSC	L-M	U S
	western wood-pewee	<i>Contopus sordidulus</i>		L-M	C S
	pacific slope flycatcher	<i>Empidonax difficilis</i>		L-M	C S
	Hammond's flycatcher*	<i>Empidonax hammondi</i>		L-M	R S
	least flycatcher*	<i>Empidonax minimus</i>		L-M	R S
	willow flycatcher	<i>Empidonax traillii</i>	FSC	L-M	C S
HIRUNDINIDAE					
	tree swallow	<i>Tachycineta bicolor</i>		L-M	C S,SF
	cliff swallow	<i>Hirundo pyrrhonota</i>		C-L	U S,SF
	barn swallow	<i>Hirundo rustica</i>		C-M	C S,SF
	northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>		C-L	U S,SF
	violet-green swallow	<i>Tachycineta thalassina</i>		C-M	C S,SF
CORVIDAE					
	Northwestern crow	<i>Corvus caurinus</i>		C-M	C P
	common raven	<i>Corvus corax</i>		C-M	C P
	Steller's jay	<i>Cyanocitta stelleri</i>		L-M	C P
	Gray Jay??	<i>Perisoreus canadensis</i>		-	-
PARIDAE					
	black-capped chickadee	<i>Parus atricapillus</i>		L-M	C P
	chestnut-backed chickadee	<i>Parus rufescens</i>		L-M	C P
AEGITHALIDAE					
	bush tit?	<i>Psaltiriparus minimus</i>		L	U P
CERTHIIDAE					
	brown creeper	<i>Certhia americana</i>		L-M	C P
SITTIDAE					
	red-breasted nuthatch	<i>Sitta canadensis</i>		L-M	C P
	pygmy nuthatch??	<i>Sitta pygmaea</i>		-	-
TROGLODYTIDAE					
	Bewick's wren	<i>Thryomanes bewickii</i>		L	C P
	winter wren	<i>Troglodytes troglodytes</i>		L-M	C P
	marsh wren?	<i>Cistothorus palustris</i>		L	U P

common name/status	genus/species	status	ecozone	abundance/seasonality
MUSCICAPIDAE				
hermit thrush	<i>Catharus guttatus</i>		M	U P
Swainson's thrush	<i>Catharus ustulatus</i>		L-M	C S
varied thrush	<i>Ixoreus naevius</i>		L-M	C P
Townsend's solitaire?	<i>Myadestes townsendii</i>		L-M	R W
ruby-crowned kinglet	<i>Regulus calendula</i>		L-M	C P
American robin	<i>Turdus migratorius</i>		C-M	C P
LANIIDAE				
northern shrike	<i>Lanius excubitor</i>		L	U W
BOMBYCILLIDAE				
cedar waxwing	<i>Bombycilla cedrorum</i>		L-M	U P
STURNIDAE				
european starling	<i>sturnus vulgaris</i>		L	U P
VIREONIDAE				
warbling vireo	<i>Vireo gilvus</i>		L-M	U S
Hutton's vireo	<i>Vireo huttoni</i>		L-M	C P
red-eyed vireo	<i>Vireo olivaceus</i>		L-M	U S
solitary vireo	<i>Vireo solitarius</i>		L-M	C S
EMBERIZIDAE				
yellow-rumped warbler	<i>Dendroica coronata</i>		L-M	C S
black-throated gray warbler	<i>Dendroica nigrescens</i>		L-M	C S
yellow warbler	<i>Dendroica petechia</i>		L	U S
Townsend's warbler	<i>Dendroica townsendii</i>		L-M	U S
common yellowthroat	<i>Geothlypis trichas</i>		L	C S
Macgillivray's warbler	<i>Oporornis tolmiei</i>		L	U S
orange-crowned warbler	<i>Vermivora celata</i>		L-M	C S
wilson's warbler	<i>Wilsonia pusilla</i>		L-M	C S
black-headed grosbeak	<i>Pheucticus melanocephalus</i>		L-M	C S
spotted towhee	<i>Pipilo maculatus</i>		L-M	C P
song sparrow	<i>Melospiza melodia</i>		L-M	C P
fox sparrow	<i>Passerella iliaca</i>		L-M	U W
golden-crowned sparrow	<i>Zonotrichia atricapilla</i>		L	U SF,W
white-crowned sparrow	<i>Zonotrichia leucophrys</i>		L	C P

common name/status	genus/species	status	ecozone	abundance/seasonality
dark-eyed junco	<i>Junco hyemalis</i>		L-M	C P
red-winged blackbird	<i>Agelaius phoeniceus</i>		L	C P
brown-headed cowbird	<i>Molothrus ater</i>		L-M	? S
northern oriole	<i>Icterus galbula</i>		L	U S
western tanager	<i>Piranga ludoviciana</i>		L-M	C S
FRINGILLIDAE				
pine siskin	<i>Carduelis pinus</i>		L-M	C P
American goldfinch	<i>Carduelis tristis</i>		L	C P
red crossbill	<i>Loxia curvirostra</i>		L-M	U ?
white crossbill	<i>Loxia leucoptera</i>		L-M	U SF
purple finch	<i>Carpodacus purpureus</i>		L-M?	U P
house finch	<i>Carpodacus mexicanus</i>		L-M	C P
evening grosbeak	<i>Coccothraustes vespertinus</i>		L-M	C P
pine grosbeak	<i>Pinicola enucleator</i>		L-M	R-?

MAMMALS

common name/status	genus/species	status	ecozone	abundance/seasonality
Order MARSUPIALIA				
DIDELPHIDAE				
Virginia opossum	<i>Didelphis virginiana</i>		L	- P
Order INSECTIVORA				
SORICIDAE				
marsh shrew*	<i>Sorex benderii</i>		M	-
masked shrew?	<i>Sorex cinereus</i>		M	-
dusky shrew**?	<i>Sorex obscurus</i>			-
Trowbridge's shrew*	<i>Sorex trowbridgii</i>		L-M	-
vagrant shrew*	<i>Sorex vagrans</i>		L-M	-
TALPIDAE				
shrew-mole*	<i>Neurotrichus gibbsii</i>			-
Townsend's mole*	<i>Scapanus townsendii</i>			-
coast mole*	<i>Scapanus orarius</i>			-
Order CHIROPTERA				
VESPERTILIONIDAE				
big brown bat	<i>Eptesicus fuscus</i>	SP	L-M	- P
silver-haired bat	<i>Lasionycteris noctivagans</i>	SP	L-M	-
long-eared myotis	<i>Myotis evotis</i>	FSC/SP	L-M	-
Keen's myotis	<i>Myotis keenii</i>	SP	L-M	-
little brown myotis	<i>Myotis lucifugus</i>	SP	L-M	-
California myotis	<i>Myotis californicus</i>	SP	L-M	-
long-legged myotis	<i>Myotis volans</i>	FSC/SP	L-M	-
Yuma myotis	<i>Myotis yumanensis</i>	FSC	L-M	-
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FSC/SC	L-M	- P
Hoary bat?	<i>Lasiurus cinereus</i>	SP	?M	-
Order LAGOMORPHA				
LEPORIDAE				
snowshoe hare	<i>Lepus americanus</i>		L-M	U P
eastern cottontail	<i>Sylvilagus floridanus</i>		L	C P
Order RODENTIA				
APLodontiidae				
mountain beaver	<i>Aplodontia rufa</i>		L-M	U P
SCIURIDAE				
Townsend's chipmunk	<i>Tamias townsendii</i>	SP	L-M	C P
Douglas squirrel	<i>Tamiasciurus douglasii</i>	SP	L-M	C P
northern flying squirrel*	<i>Glaucomys sabrinus</i>	SP	L-M	- P
common name/status	genus/species	status	ecozone	abundance/seasonality

CASTORIDAE	beaver	<i>Castor canadensis</i>	L-M	U	P
CRICETINAE	deer mouse bushy-tailed woodrat	<i>Peromyscus maniculatus</i> <i>Neotoma cinerea</i>	L-M M	C U	P P
MICROTINAE	Townsend's vole muskrat**?	<i>Microtus townsendii</i> <i>Ondatra zibethicus</i>	L L	C -	P -
ZAPODIDAE	pacific jumping mouse*	<i>Zapus trinotatus</i>	L-M	-	-
ERETHIZONTIDAE	porcupine	<i>Erethizon dorsatum</i>	L-M	U	P
Order CARNIVORA CANIDAE	coyote red fox	<i>Canis latrans</i> <i>Vulpes vulpes</i>	L-M L-?	C U	P P
URSIDAE	black bear	<i>Ursus americanus</i>	L-M	R	P
PROCYONIDAE	raccoon	<i>Procyon lotor</i>	C-M	C	P
MUSTELIDAE	mink long-tailed weasel* ermine ?? striped skunk spotted skunk* river otter	<i>Mustela vison</i> <i>Mustela frenata</i> <i>Mustela erminea</i> <i>Mephitis mephitis</i> <i>Spilogale gracilis</i> <i>Lutra canadensis</i>	C-L L-M - C-L - C-L	- - - C - U	- - - P - P
FELIDAE	cougar bobcat*	<i>Felis concolor</i> <i>Lynx rufus</i>	L-M -	R -	- -
Order ARTIODACTYLA CERVIDAE	black-tailed deer	<i>Odocoileus hemionus columbianus</i>	L-M	C	P

Invertebrate Species of Blanchard Mountain

The following list of 27 butterfly species, was compiled from observations and field notes from Chuckanut Mountain and Colony Mountain by Al Hanners, David Drummond and Ann Eissinger. The Washington State Natural Heritage Program database also had one entry from Bob Pyle, PhD noted below. A list of common-likely to occur species for the Chuckanuts was also provided by Lois Garlick, however it is not known how many of those in her list were observed in the field. Due to the similar habitats and host plants available on Blanchard Mt. the following species are likely to occur throughout the Chuckanut range including Blanchard Mountain. It should also be noted that certain species are migratory and a record directly north or south, reflects the near certainty that the species passed through the Blanchard Mt. Area. A field survey of all habitats for butterflies on Blanchard Mountain is needed to verify species presence, identify their host plants and associated vegetation community. Such a survey would require multiple seasons to account for migrant and rare species occurrence and would greatly expand the available information for butterflies in the Blanchard Mountain area.

<u>common name</u>	<u>genus/species</u>	<u>common name</u>	<u>genus/species</u>
Monach	<i>Danaus plexippus</i>	faun anglewing	<i>Polygonia faunus</i>
Viceroy	<i>Basilarchia dissippus</i>	dark gray comma	<i>Polygonia progne silenus</i>
		satyr comma	<i>Polygonia satyrus</i>
red admiral	<i>Vanessa atalanta</i>	zephyr angelwing	<i>Polygonia zephyrus</i>
painted lady	<i>Vanessa cardui</i>		
morning cloak	<i>Vanessa autiope</i>	Parnassian	<i>Parnassian sp</i>
Milberts Tortoisehell	<i>Vanessa milberti</i>	Parnassian	<i>Parnassian smytheus</i>
W. Tiger swallowtail	<i>Papilio rutulus</i>	Compton's tortishell	<i>Nymphalis vau-album</i>
Anise swallowtail	<i>Papilio zelicaun</i>		
short-tailed black swallowtail	<i>Papilio indra</i>	Orange margined blue	<i>Plebejus melissa acmon</i>
pale tiger swallowtail	<i>Papilio eurymedon</i>	Western tailed blue	<i>Everes amyntula</i>
Oregon swallowtail	<i>Papilio oregonias</i>	Silvery blue (Couper's)	<i>Glaucopsyche lygdamus couperi</i>
Lorquin's admiral	<i>Limenitis lorquini</i>	woodland skipper	<i>Ochlodes sylvanoides</i>
		pine white	<i>Neophasia menapia</i>
cabbage white	<i>Pieris napi</i>		
common white	<i>Pieris protodirei</i>	Thicket Hairstreak	<i>Mitoura spinetorum (i.d. 'd by Bob Pyle 1955)</i>

Noctuid Moths (Lepidoptera: Noctuidae) of Chuckanut Mountain, Whatcom County (1992-1996)

The following list contains 171 species of noctuid moths captured and identified on Chuckanut Mountain by lepidopterist, Lars Crabo, M.D. This is the only known comprehensive moth inventory in the area and resulted in a high diversity of species. The species identified reflected 25 percent of all known species in the state and includes one species state record, two species second records and one species third record. A summary of dates and resulting notes are also included. The diversity and potential abundance of moths in the Chuckanut needs to be emphasized as an important and unique feature. The relationship between bats and moths should also be emphasized and is likely a significant relationship throughout the Chuckanuits and Blanchard Mountain.

Sites and dates species were collected:

North Chuckanut Mountain, grass bald with oaks (A): 14 April; 21 April; 4 May; 15 May; 24 May; 2 June; 24 June; 5 July; 22 July; 23 July; 10 August; 18 August; 20 August; 21 August; 25 August; 26 August; 31 August; 1 September; 18 September; 19 September; 20 October.

North Chuckanut Mountain, west slope at 1355 Chuckanut Drive, dry forest and sandstone cliff (B): 6 February; 19 March; 22 March; 23 March; 24 March; 28 March; 29 March; 1 April; 12 April; 15 April; 20 April; 4 May; 5 May; 10 May; 11 May; 17 May; 20 May; 24 May; 26 May; 28 May; 31 May; 1 June; 9 June; 13 June; 15 June; 16 June; 22 June; 24 June; 25 June; 28 June; 3 July; 12 July; 16 July; 23 July; 30 July; 31 July; 1 August; 12 August; 17 August; 25 August; 27 August; 28 August; 8 September; 13 September; 2 November.

North end of Chuckanut Bay, marsh with aspens (C): 16 May; 30 June; 18 July; 24 July; 13 August; 12 September

Species list (site and date reference in parentheses):

genus/species	reference	genus/species	reference	genus/species	reference
Noctuidae					
<i>Palthis angulalis</i>	(B)	<i>Autographa metallica</i>	(B)	<i>Apamea amputatrix</i>	(A B C)
<i>Bomolocha bijugalis</i>	(B)	<i>Autographa corusca</i>	(B)	<i>Apamea remissa</i>	(B)
<i>Bomolocha palparia</i>	(B)	<i>Autographa ampla</i>	(B)	<i>Apamea sordens</i>	(B)
<i>Hypena humuli</i>	(B)	<i>Syngrapha rectangula</i>	(A)	<i>Apamea ophiogramma</i>	(B)
<i>Hypena californica</i>	(A B)	<i>Syngrapha celsa</i>	(A B)	<i>Apamea cogitata</i>	(A B C)
<i>Hypena decorata</i>	(B)	<i>Nycteola frigidana</i>	(B)	<i>Apamea devastator</i>	(A C)
<i>Hypena modesta</i>	(B)	<i>Nola minna</i>	(B)	<i>Luperina passer</i>	(B)
<i>Scoliopteryx libatrix</i>	(B C)	<i>Lithacodia albidula</i>	(C)	<i>Eremobina hanhami</i>	(A)
<i>Cissusa indiscreta</i>	(A)	<i>Panthea portlandia</i>	(A B)	<i>Oligia indirecta</i>	(B C)
<i>Synedroida divergens</i>	(B)	<i>Raphia frater</i>	(C)	<i>Oligia tusa</i>	(C)
<i>Zale lunata</i>	(B)	<i>Acronicta hesperida</i>	(A B C)	<i>Oligia torosa</i>	(A)
<i>Zale minerea</i>	(B)	<i>Acronicta innotata</i>	(B)	<i>Oligia violacea</i>	(C)
<i>Catocala relicta</i>	(A B)	<i>Acronicta impleta</i>	(B)	<i>Oligia illocata</i>	(B)
<i>Catocala allusa</i>	(B)	<i>Apamea cuculliformes</i>	(B)	<i>Archana oblonga</i>	(C)
<i>Abrostola urentis</i>	(B)	<i>Apamea atriclava</i>	(B)	<i>Celeana reniformis</i>	(C)
<i>Trichoplusia ni</i>	(A)	<i>Apamea maxima</i>	(A)	<i>Aseptis binotata</i>	(A B)
<i>Eosporopteryx thyatyroides</i>	(B)	<i>Apamea antennata</i>	(A B)	<i>Aseptis adnixa</i>	(B)
<i>Autographa mappa</i>	(B)	<i>Apamea vultuosa</i>	(A)	<i>Euplexia benesimilis</i>	(A B C)
<i>Autographa californica</i>	(A B)	<i>Apamea alia</i>	(A B)	<i>Phlogophora periculosa</i>	(A B)

<i>Energia decolor</i>	(B)	<i>Lacinipolia comis</i>	(A B)	<i>Agrotis ipsilon</i>	(A)
<i>Chytonix divesta</i>	(A B)	<i>Lacinipolia davena</i>	(A)	<i>Pseudorthosia variabilis</i>	(A)
<i>Andropolia aedon</i>	(A)	<i>Lacinipolia pensilis</i>	(A B)	<i>Peridroma saucia</i>	(B)
<i>Hyppa species near xylinoides</i>	(A B)	<i>Lacinipolia stricta</i>	(A)	<i>Ochrolepura plecta</i>	(A C)
<i>Properigea niveirena</i>	(A B)	<i>Lacinipolia olivacea</i>	(B)	<i>Diarsia esurialis</i>	(A B)
<i>Pseudobryomima muscosa</i>	(A B)	<i>Lacinipolia patalis</i>	(A B)	<i>Diarsia rosaria</i>	(A B C)
<i>Amphipyra tragopoginis</i>	(A)	<i>Lacinipolia procincta</i>	(A B)	<i>Noctua comes</i>	(A B)
<i>Caradrina morpheus</i>	(A B C)	<i>Dargida procincta</i>	(A B C)	<i>Graphiphora augur</i>	(C)
<i>Platyperigea meralis</i>	(A)	<i>Alelia oxygala</i>	(A B C)	<i>Eurois occulta</i>	(B)
<i>Platyperigea montana</i>	(A B)	<i>Leucania farcta</i>	(A B)	<i>Eurois stricta</i>	(B)
<i>Achytonix epipaschia</i>	(A B)	<i>Leucania oregona</i>	(C)	<i>Xestia flavotincta</i>	(A)
<i>Xylena nupera</i>	(B)	<i>Leucania multilinea</i>	(A B)	<i>Xestia smithii</i>	(A B)
<i>Lithomolia germana</i>	(B)	<i>Leucania insueta</i>	(A)	<i>Xestia xanthographa</i>	(A B)
<i>Homoglaea dives</i>	(A B)	<i>Aceria normalis</i>	(A B)	<i>Xestia mustelina</i>	(A B)
<i>Lithophane innominata</i>	(B)	<i>Orthosia transparent</i>	(A B)	<i>Xestia species near vernilis</i>	(B)
<i>Lithophane amanda</i>	(B)	<i>Orthosia praeses</i>	(A B)	<i>Xestia oblata</i>	(A)
<i>Lithophane dilatocula</i>	(B)	<i>Orthosia mys</i>	(A)	<i>Xestia c-nigrum</i>	(A B)
<i>Lithophane thaxteri</i>	(B)	<i>Orthosia revicta</i>	(A B)	<i>Adelphagrotis indeterminata</i>	(A)
<i>Eupsilia tristigmata</i>	(A B)	<i>Orthosia pacifica</i>	(A B)	<i>Adelphagrotis stellaris</i>	(A B)
<i>Mesogona olivata</i>	(A B)	<i>Orthosia hibisci</i>	(A B)	<i>Cerastis enigmatica</i>	(B)
<i>Agrochola pulchella</i>	(A B)	<i>Egira simplex</i>	(A B)	<i>Noctua comes</i>	(A C)
<i>Sunira acta</i>	(A B)	<i>Egira crucialis</i>	(A B)	<i>Anaplectoides prasina</i>	(A B C)
<i>Platypolia contadina</i>	(A)	<i>Egira rubrica</i>	(A B)	<i>Anaplectoides pressus</i>	(B)
<i>Dryotype opina</i>	(A B)	<i>Egira perlubens</i>	(A B)	<i>Protolampra rufipectus</i>	(C)
<i>Brachylobia algens</i>	(C)	<i>Homorthodes furturata</i>	(A B C)	<i>Hemigraphiphora plebeia</i>	(A)
<i>Feralia deceptiva</i>	(A B)	<i>Homorthodes fractura</i>	(A B)	<i>Abagrotis trigona</i>	(A)
<i>Feralia comstocki</i>	(A B)	<i>Homorthodes communis</i>	(A B)	<i>Abagrotis forbesi</i>	(A)
<i>Pleromelloida obliquata</i>	(A B)	<i>Homorthodes hanhami</i>	(A B)	<i>Abagrotis baueri</i>	(A)
<i>Pleromelloida cinerea</i>	(A B)	<i>Pseudorthodes irrorata</i>	(A)	<i>Abagrotis scopeops</i>	(A)
<i>Oncocnemis semicollaris</i>	(A B)	<i>Zosteropoda hirtipes</i>	(A B)	<i>Abagrotis pulchrata</i>	(A)
<i>Oncocnemis dunbari</i>	(A)	<i>Euxoa messoria</i>	(A)	<i>Abagrotis apposita</i>	(A)
<i>Behrensia conchiformis</i>	(A B)	<i>Euxoa divergens</i>	(A)	<i>"Rhynchagrotis" formalis</i>	(A)
<i>Mamestra configurata</i>	(A)	<i>Euxoa vetusta</i>	(A)	<i>"Rhynchagrotis" insularis</i>	(A)
<i>Polia nimbose</i>	(A B)	<i>Euxoa terrena</i>	(A)	<i>"Rhynchagrotis" sp., not insularis</i>	(A)
<i>Melanchra adjuncta</i>	(A B)	<i>Euxoa declarata</i>	(A)	<i>Heliothis phloxiphaga</i>	(B)
<i>Lacanobia subjuncta</i>	(A B C)	<i>Euxoa satis</i>	(A)		
<i>Lacanobia lutra</i>	(A)	<i>Euxoa plagigera</i>	(A)		
<i>Trichordestra liquida</i>	(B)	<i>Euxoa comosa</i>	(B)		
<i>Lacinipolia cuneata</i>	(A B)	<i>Euxoa obeliscoides</i>	(A)		
		<i>Agrotis vancouverensis</i>	(A B)		

Comments:

Localities (A) and (B) are among the best sampled sites in Washington. Site (C) needs additional collecting. The total number of species for all three sites, 170, is approximately a quarter of the known noctuid fauna of Washington. There are no other sites with nearly as many recorded species in western

Washington. This might be partially due to limited sampling elsewhere. For comparison, Yellow Island in San Juan County has 55 species and sites in Douglas and Josephine Counties, Oregon have close to 200.

I have recently sampled grasslands in the Olympic rainshadow (Chuckanut Mountain; Fidalgo Island; Orcas and Yellow Island). The fauna from these areas is similar to that recorded from the Saanich Peninsula of Vancouver Island around the turn of the century. This fauna differs somewhat from that of the Willamette Valley in Oregon which has (or had) more extensive grassland and oak savannah, and considerably more from that of the dry interiors of Washington and British Columbia. While each of the sites have had some of the dry habitat species none has had all of the species known from this region. In fact, each site has had different faunas. I speculate that this due to the fact that the small fragmented grassland habitats act like islands. The total number of species present is dependent of the size of the habitat and species at specific sites experience local extinctions and recolonizations. If this is true then the health of the regional fauna will require preservation of as much of the remaining habitat as possible, including small sites.

Sites (A) and (B) are from dry slopes and have a large number of species that are known only from a limited number of sites in western Washington, mostly in the rainshadow. Many of these species are in the genera *Apamea*, *Euxoa*, and *Abagrotis*.

The following is a list of the most interesting species from the Chuckanut Mountain:

Abagrotis pulchrata is only known from one specimen from site (A) in Washington. It is a rare species found from southern Vancouver Island to San Francisco. *A. baueri* is known only from site (A) and at Satus Pass, Klickitat County, in Washington. It probably feeds on oak as a larva.

Xestia species near *vernalis* is only known from Squamish, British Columbia, one site in King County, Washington and site (B) (one specimen). It will be described presently by Dr. J. Donald Lafontaine in one of the next Moths of North America fascicles.

Apamea atriclava occurs from southern Vancouver Island to northern California. It is known only from site (B) (one specimen), Moran State Park, Orcas Island, and Yellow Island in Washington. *A. cuculliformes* has been found at Semiahmoo Spit and site (B) in western Washington. It is widely distributed in eastern Washington but is uncommon.

Cissusa indiscreta feeds on oak and is common near the Columbia Gorge. It is rare this far north because of the limited distribution of its foodplant. It and *A. baueri* are the only probable obligate oak feeders found at site (A).

Oligia tusa and *Leucania multilinea* are only found near the Pacific Coast. Both were only found at site (C) at Chuckanut Mountain.

There are only five introduced Eurasian noctuid species in Washington. Four of these were found on the survey: *Caradrina morpheus*, *Apamea ophiogramma*, *Noctua comes*, and *Xestia xanthographa*.